1
Chapter

Before Use

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muratec
MURATA MACHINERY, LTD.

Sec 1 Introduction

This manual provides operational and specialized information for those operators working with the machine. Proper machine operation, including proper adjustment and maintenance, will ensure optimum machine performance. Moreover, operational method can influence the quality of yarn produced as well as machine service life.
Please read this manual entirely in order to maintain the best operating conditions and ensure maximum performance and safe operation.

Sec 2 Operation Notice

- Before operating the machine, please read completely the section entitled <Safety Regulations and Accident Prevention> on the next page.
- Observe all procedures stated in <Safety Regulations and Accident Prevention> when operating the machine.
- There may be slight differences in specifications between the delivered machine and the manual dependent upon design and model type.

This instruction manual must be made available to operators and maintenance personnel at all times. In the event the machine is resold, this instruction manual must accompany the machine to its new destination. The new purchaser must receive training from Murata Machinery Ltd. with respect to operation of the machine. Murata Machinery Ltd. accepts no responsibility for any problem arising from failure to satisfy these conditions.

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The contents of this instruction manual and the machinery described in it are subject to change without prior notice.

Edited by: Documentation Team

Sec 3 Safety Regulations & Accident Prevention

OBEY THE FOLLOWING SAFETY REGULATIONS AT ALL TIMES

WARNING

Failure to observe the following precautions can lead to a fire or electric shock, causing death or serious injury.

1. Safety Cautions

- Regardless of whether or not the machine is in operation, pulling out or plugging in an electrical connector or electrical board while the machine's power is on may generate sparks or cause a fire. Always turn the main switch off before pulling out or plugging in an electrical connector or electrical board.

2 Operation Safety Regulations

- Never operate the machine during heavy thunder storms.

CAUTION

Failure to observe the following precautions can lead to injury, or to damage to the machine or surrounding objects.

1. Safety Cautions

- Note and memorize the position of the emergency stop switches so that you can operate without delay if an emergency occurs.
- Before starting the machine, check around the periphery of the machine and confirm that it is safe to start it.
- Turn the main power switch off, and lock it out before performing any maintenance or adjustments to the machine.
- Turn the machine off at the control panel, and switch off and lock out the main power switch before leaving the machine unattended.
- If a power outage occurs, switch off and lock out the main power switch.
- Never open the machine doors or covers when it is operating.
- Before performing maintenance work, switch off and lock out the main power switch to ensure that the machine cannot accidentally be started.
- Work on motors and other electrical equipment must only be performed by trained and authorized electrical technicians.

2. General Safety Regulations

- This machine must only be operated by personnel who have received instruction and practical training in its operation.
- Strictly obey all safety regulations when operating or performing maintenance on the machine.
- Confirm that all safety equipment used with the machine (protective covers, guards, switches etc.) are functioning correctly before operating the machine.
- Store this instruction manual in a location where it is always accessible to operators and maintenance personnel.
- If, for any reason, an accident occurs, or a situation that you see as being potentially dangerous arises, notify Murata Machinery in writing immediately.

3. Hair and Clothing Regulations

- Operators with long hair must pin their hair up and wear a hairnet to prevent entanglement in the rotating parts of the machine.
- Never wear skirts or loose clothing when operating the machine.
- Depending on machine operating conditions noise levels may exceed 85 dB (A). Operator should wear ear protection while using the machine to prevent hearing loss.

4. Operation Safety Regulations

- Never attempt to remove yarn that has wound onto belts or other rotating parts of the machine while the machine is operating.

5. Maintenance Safety Regulations

- Turn the machine off before cleaning the machine or its periphery.
- After performing maintenance on the machine, ensure that all parts are returned to their initial state (ready for start up).
- After performing maintenance on the machine, be certain to install all covers and guards to their original positions before starting the machine.
- Strictly observe the instructions regarding lubrication (type and amount of lubricant, locations requiring lubrication, and lubrication schedule) in this instruction manual.
- Use only the specified lubricants or products with equivalent ratings.
- Only replace electrical parts with the same parts, or parts with equivalent ratings. Never replace electrical parts while the power is on.
- Fuses must only be replaced by parts with equivalent ratings. Never replace fuses with fuses of greater current capacity, as this may result in damage to the machine.
- Work on motors and other electrical equipment must only be performed by trained and authorized electrical technicians.
- When cleaning the blower impeller, first confirm that the impeller is stopped before starting any work.

6. How to Handle Inverter

Be careful when handling the inverter. Mishandling may cause an accident. When handling, note the following:

- If the input power is connected to terminals U, V, or W of the inverter, the inverter may be damaged.
- A large-capacity electrolytic condenser is used with the inverter. High-voltage electric energy is stored in the circuit for five minutes after the power is turned OFF (until the CHARGE lamp turns off). To avoid accidents such as electric shocks and short circuits, be careful when handling the inverter.

* When inspecting, cleaning or wiring, wait more than five minutes after turning the power OFF.

- The allowable voltage range is the supply voltage ± 10% as the specifications indicate. If the voltage is out of this range, the machine may not work. The allowable power frequency variation is ± 5%.
- Do not add a power-factor improving condenser. It may damage the inverter.
- Special mechanisms are deployed for the inverter. When the inverter needs to be repaired or replaced, make sure to contact Murata Parts Sales, Ltd. as shown in the “Contact List” at the end of this manual.

7. Replacing the Back-up Lithium Battery

- Make sure to turn OFF the main switch before replacing the battery.

8. Unusable Fibers

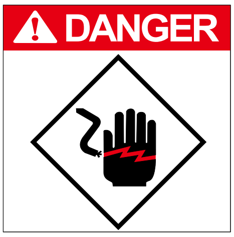
- Electrically conductive fibers (carbon fibers and metallic fibers) cannot be used. If the yarn fiber (fly waste) contacts the printed circuit board, there is a risk a short circuit could result in damage or incorrect operation of the electrical parts or fire.

Sec 4 Safety Stickers

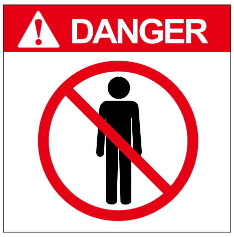
- Safety stickers are placed at various locations around the machine to warn operators of potential danger and prevent accidents. The warnings on these stickers must be obeyed at all times.
- Never remove these safety stickers from the machine. If a safety sticker comes off or becomes difficult to read, contact Murata Machinery immediately and request a replacement .
- Safety stickers are classified into three categories: DANGER, WARNING, and CAUTION. These classifications have the following meanings.

- **DANGER**
  Failure to obey the instructions on the safety sticker may result in death.
- **WARNING**
  Failure to obey the instructions on the safety sticker may result in serious personal injury or damage to the machine.
- **CAUTION**
  Failure to obey the instructions on the safety sticker may result in personal injury or damage to the machine.
- **The various safety stickers and their meanings.**
  See list below.

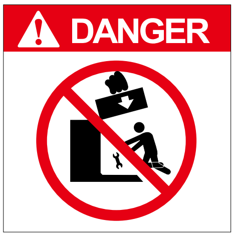
DANGER



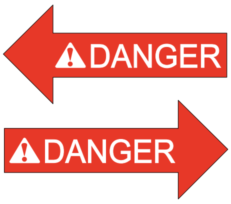
Risk of electrocution
(Electrical hazard)



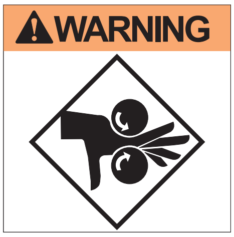
Entry prohibited



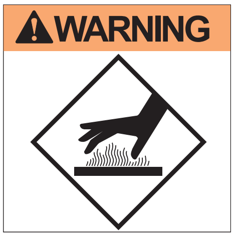
Entry prohibited



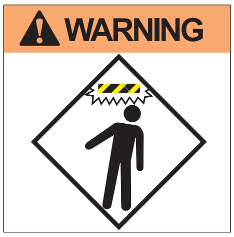
WARNING



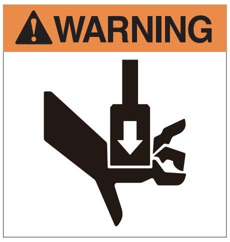
Rotating machinery hazard
(risk of mutilation)



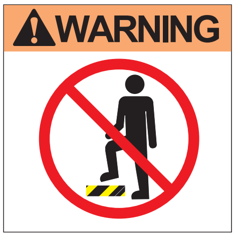
High temperature
hazard



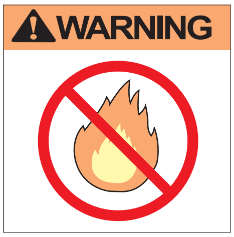
Low head clearance
hazard



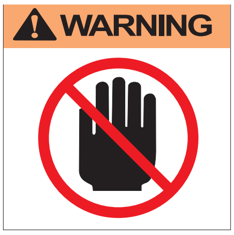
Do not put hands inside



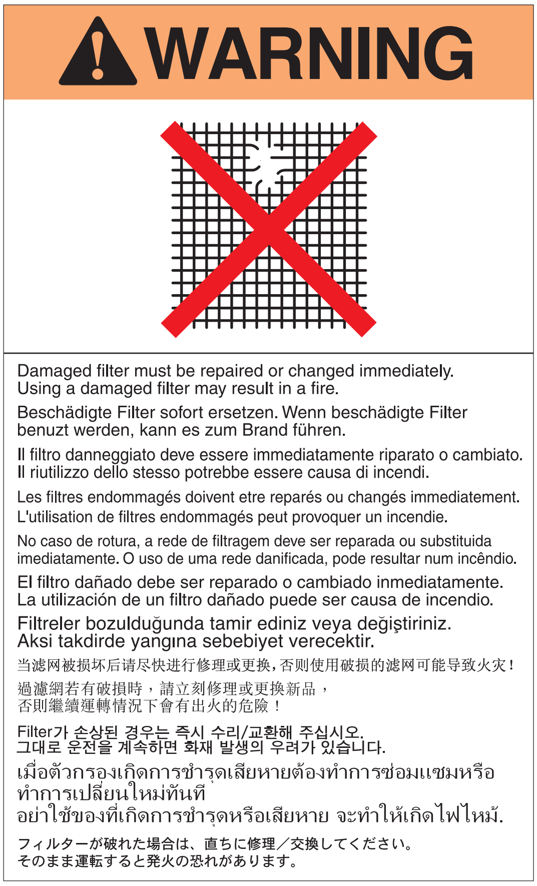
No step (do not step)



Naked flames prohibited



Do not touch



WARNING

Damaged filter must be repaired or changed immediately.
Using a damaged filter may result in a fire.

Beschädigte Filter sofort ersetzen. Wenn beschädigte Filter
benuzt werden, kann es zum Brand führen.

Il filtro danneggiato deve essere immediatamente riparato o cambiato.
Il riutilizzo dello stesso potrebbe essere causa di incendi.

Les filtres endommagés doivent etre reparés ou changés immediatement.
L'utilisation de filtres endommagés peut provoquer un incendie.

No caso de rotura, a rede de filtragem deve ser reparada ou substituida
imediatamente. O uso de uma rede danificada, pode resultar num incêndio.

El filtro dañado debe ser reparado o cambiado inmediatamente.
La utilización de un filtro dañado puede ser causa de incendio.

Filtreler bozulduğunda tamir ediniz veya değiştiriniz.
Aksi takdirde yangına sebebiyet verecektir.

当滤网被损坏后请尽快进行修理或更换，否则使用破损的滤网可能导致火灾！

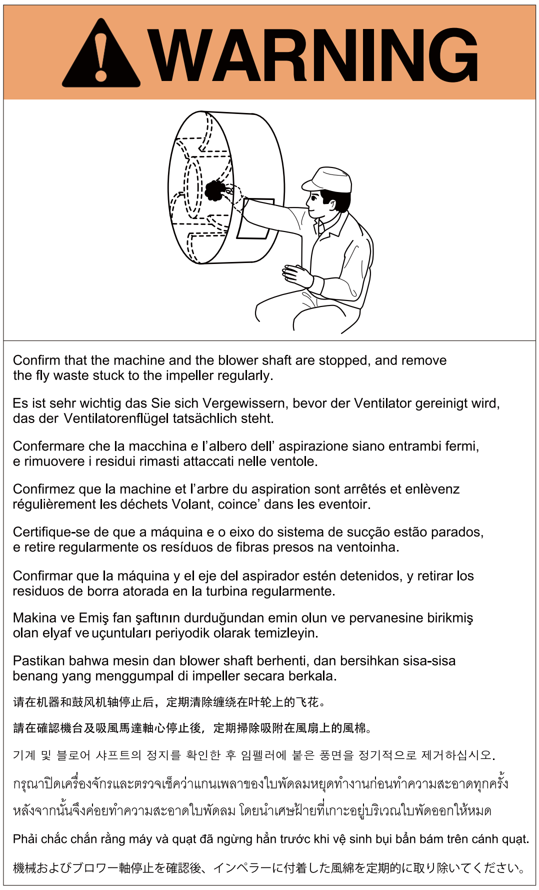
過濾網若有破損時，請立刻修理或更換新品，
否則繼續運轉情況下會有出火的危險！

Filter가 손상된 경우는 즉시 수리/교환해 주십시오.
그대로 운전을 계속하면 화재 발생의 우려가 있습니다.

เมื่อตัวกรองเกิดการชำรุดเสียหายต้องทำการซ่อมแซมหรือ
ทำการเปลี่ยนใหม่ทันที
อย่าใช้ของที่เกิดการชำรุดหรือเสียหาย จะทำให้เกิดไฟไหม้.

フィルターが破れた場合は、直ちに修理／交換してください。
そのまま運転すると発火の恐れがあります。

Do not use damaged filters



WARNING

Confirm that the machine and the blower shaft are stopped, and remove
the fly waste stuck to the impeller regularly.

Es ist sehr wichtig das Sie sich Vergewissern, bevor der Ventilator gereinigt wird,
das der Ventilatorenflügel tatsächlich steht.

Confermare che la macchina e l’albero dell’ aspirazione siano entrambi fermi,
e rimuovere i residui rimasti attaccati nelle ventole.

Confirmez que la machine et l’arbre du aspiration sont arrêtés et enlèvenz
régulièrement les déchets Volant, coince’ dans les eventoir.

Certifique-se de que a máquina e o eixo do sistema de sucção estão parados,
e retire regularmente os resíduos de fibras presos na ventoinha.

Confirmar que la máquina y el eje del aspirador estén detenidos, y retirar los
residuos de borra atorada en la turbina regularmente.

Makina ve Emiş fan şaftının durduğundan emin olun ve pervanesine birikmiş
olan elyaf ve uçuntuları periyodik olarak temizleyin.

Pastikan bahwa mesin dan blower shaft berhenti, dan bersihkan sisa-sisa
benang yang menggumpal di impeller secara berkala.

请在机器和鼓风机轴停止后，定期清除缠绕在叶轮上的飞花。

請在確認機台及吸風馬達軸心停止後，定期掃除吸附在風扇上的風棉。

기계 및 블로어 샤프트의 정지를 확인한 후 임펠러에 붙은 풍면을 정기적으로 제거하십시오.

กรุณาปิดเครื่องจักรและตรวจเช็คว่าแกนเพลาของใบพัดลมหยุดทำงานก่อนทำความสะอาดทุกครั้ง

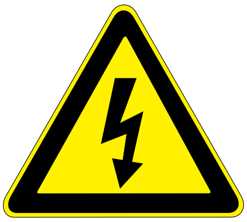
หลังจากนั้นจึงค่อยทำความสะอาดใบพัดลม โดยนำเศษฝ้ายที่เกาะอยู่บริเวณใบพัดออกให้หมด

Phải chắc chắn rằng máy và quạt đã ngừng hẳn trước khi vệ sinh bụi bẩn bám trên cánh quạt.

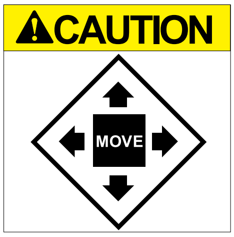
機械およびブロワー軸停止を確認後、インペラーに付着した風綿を定期的に取り除いてください。

Remove fly waste from blower impeller

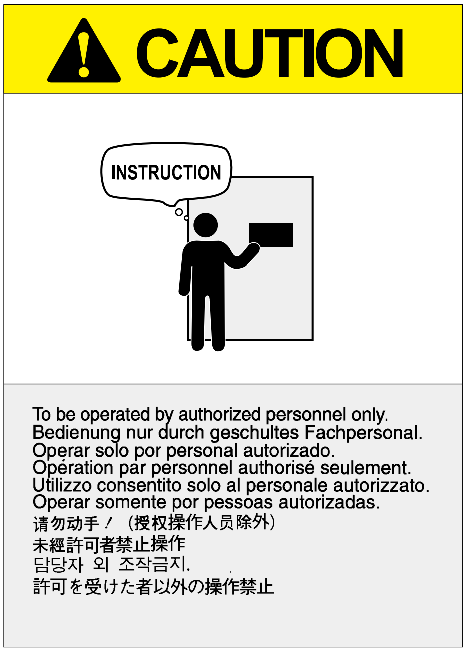
CAUTION



Electrical wiring junction location



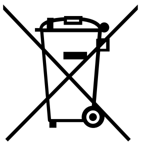
Intermittent operation



To be operated by authorized personnel only.
Bedienung nur durch geschultes Fachpersonal.
Operar solo por personal autorizado.
Opération par personnel authorisé seulement.
Utilizzo consentito solo al personale autorizzato.
Operar somente por pessoas autorizadas.
请勿动手！（授权操作人员除外）
未經許可者禁止操作
담당자 외 조작금지.
許可を受けた者以外の操作禁止

To be operated by authorized personnel only

NOTE



This symbol mark is for EU countries only.

This symbol mark is according to the directive 2006/66/EC Article 20 Information for endusers and Annex II.

Your MURATA MACHINERY product is designed and manufactured with high quality materials and components which can be recycled and/or reused.

This symbol means that batteries and accumulators, at their end-of-life, should be disposed of separately from your household waste.

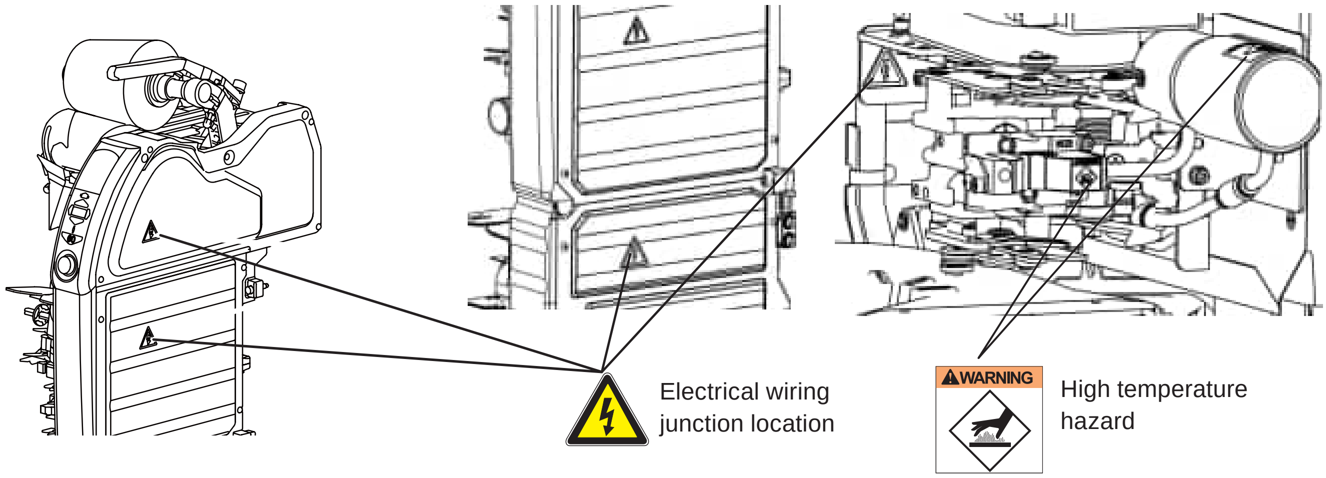
If a chemical symbol is printed beneath the symbol shown above, this chemical symbol means that the battery or accumulator contains a heavy metal at a certain concentration. This will be indicated as follows:
Hg: mercury (0.0005 %), Cd: cadmium (0.002 %), Pb: lead (0.004 %)

In the European Union there are separate collection systems for used batteries and accumulators.
Please, dispose of batteries and accumulators correctly at your local community waste collection/ recycling center. When requested, Murata Machinery will collect used batteries and accumulators free of charge.
Please, help us to conserve the environment we live in!

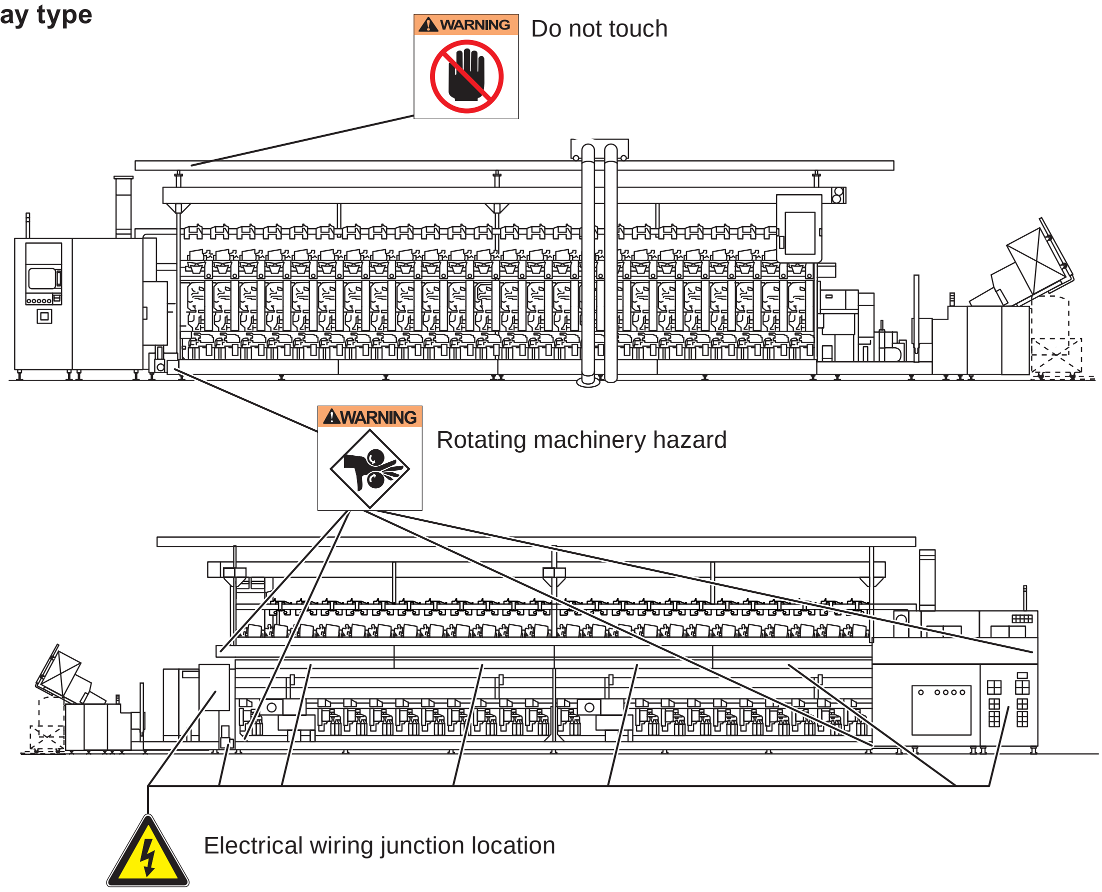
SAFETY STICKERS

DANGER **WARNING** **CAUTION**

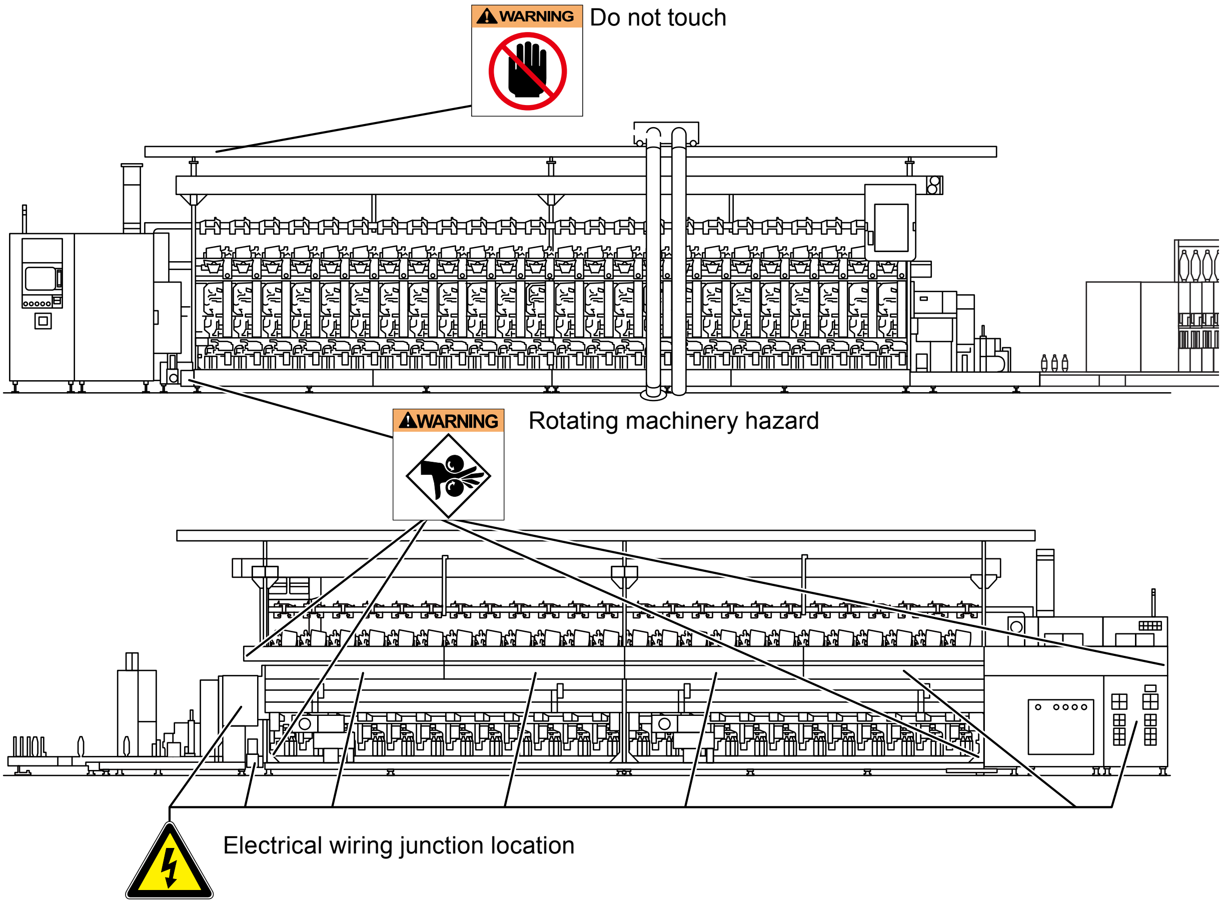
- **Winding unit**
- **Hot splicer specification**


Electrical wiring
junction location
WARNING
High temperature
hazard

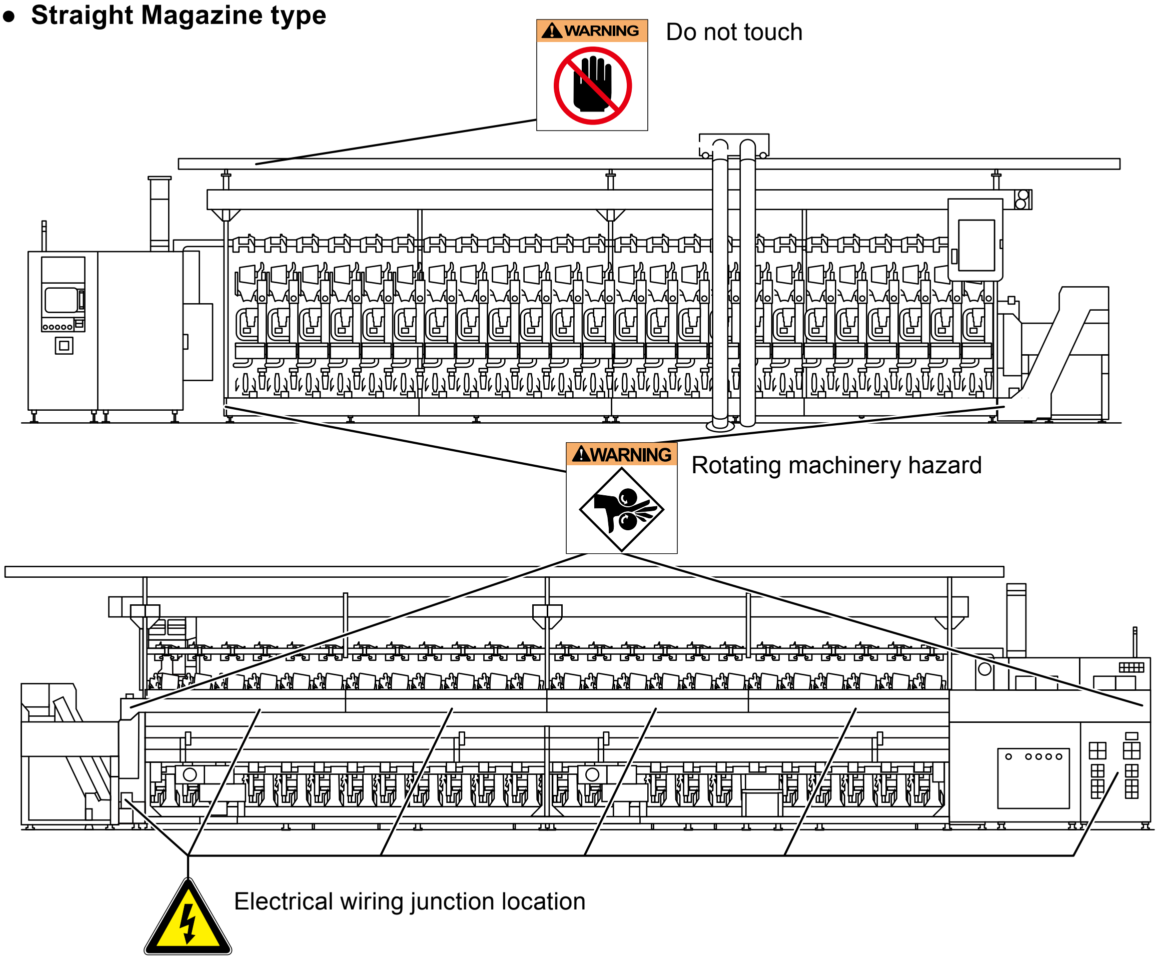
- **Bobbin Tray type**


WARNING
Do not touch
WARNING
Rotating machinery hazard
Electrical wiring junction location

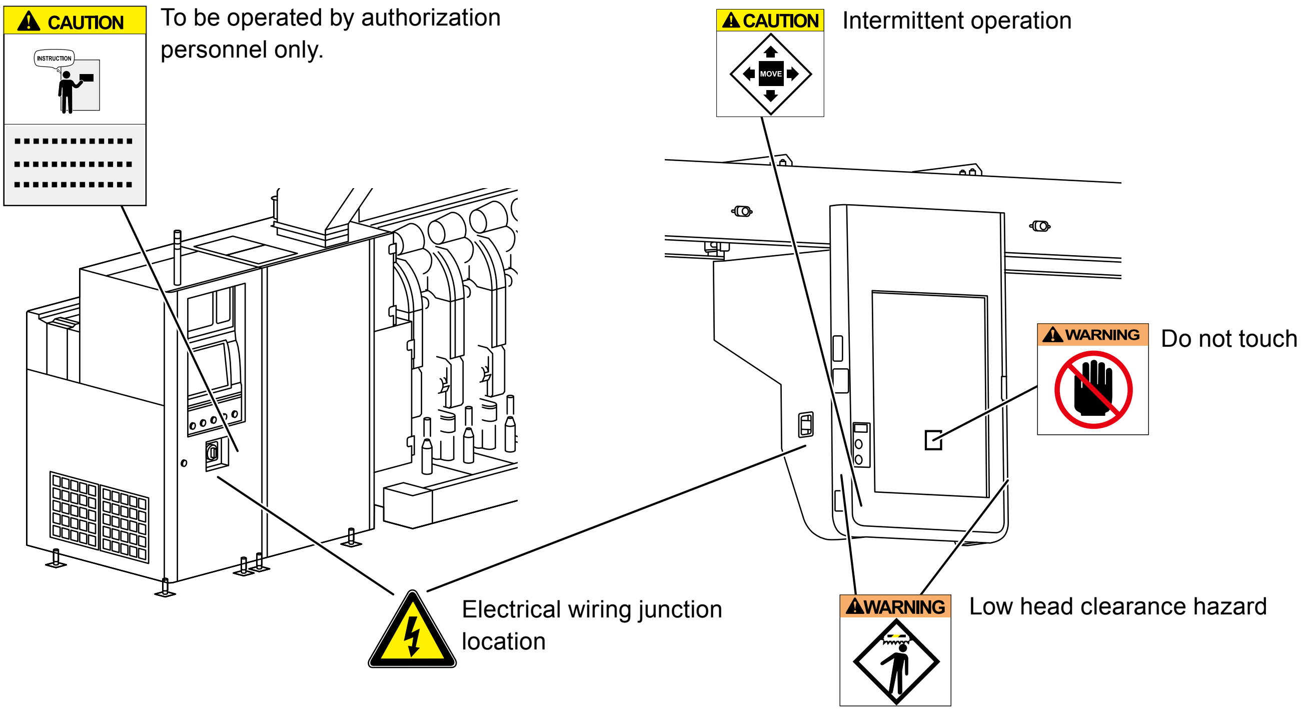
- **Link Coner type**


WARNING
Do not touch
WARNING
Rotating machinery hazard
Electrical wiring junction location

- **Straight Magazine type**


WARNING
Do not touch
WARNING
Rotating machinery hazard
Electrical wiring junction location

- **Main switch**
- **AD**


CAUTION
INSTRUCTION
CAUTION
MOVE
WARNING
WARNING

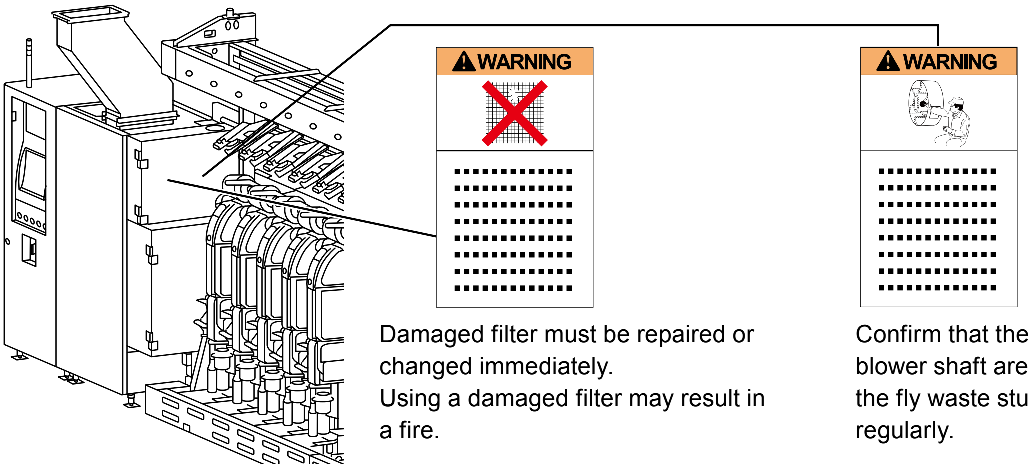
To be operated by authorization personnel only.

Intermittent operation

Do not touch

Electrical wiring junction location

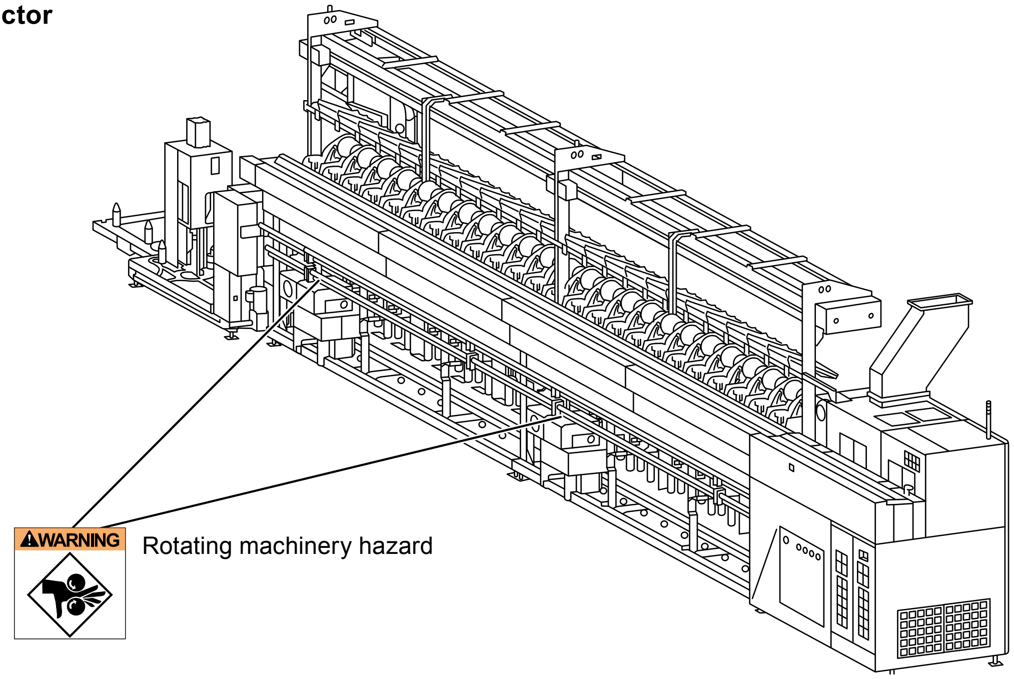
Low head clearance hazard


WARNING
WARNING

Damaged filter must be repaired or changed immediately.
Using a damaged filter may result in a fire.

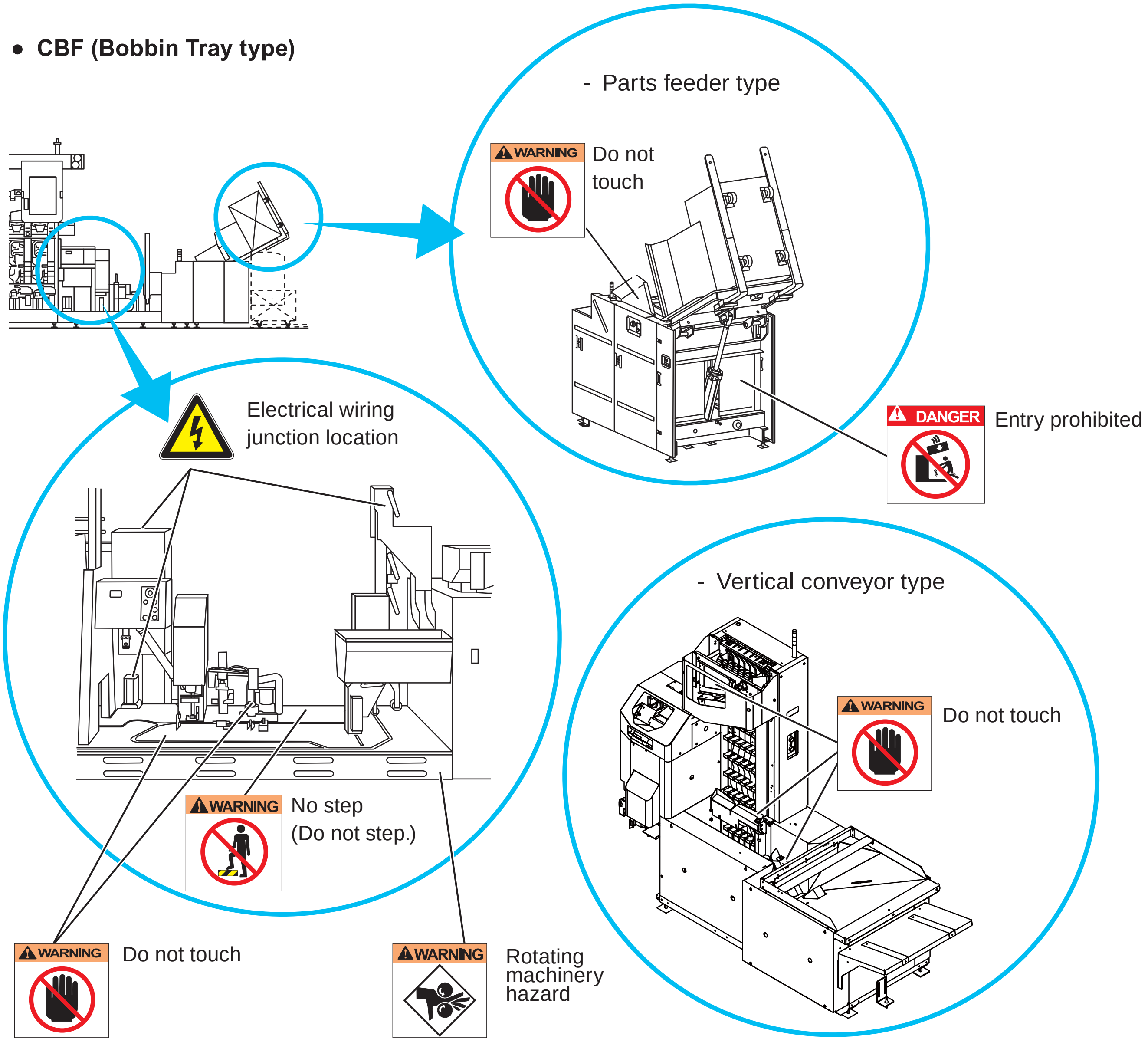
Confirm that the machine and the blower shaft are stopped, and remove the fly waste stuck to the impeller regularly.

- **Dust collector**

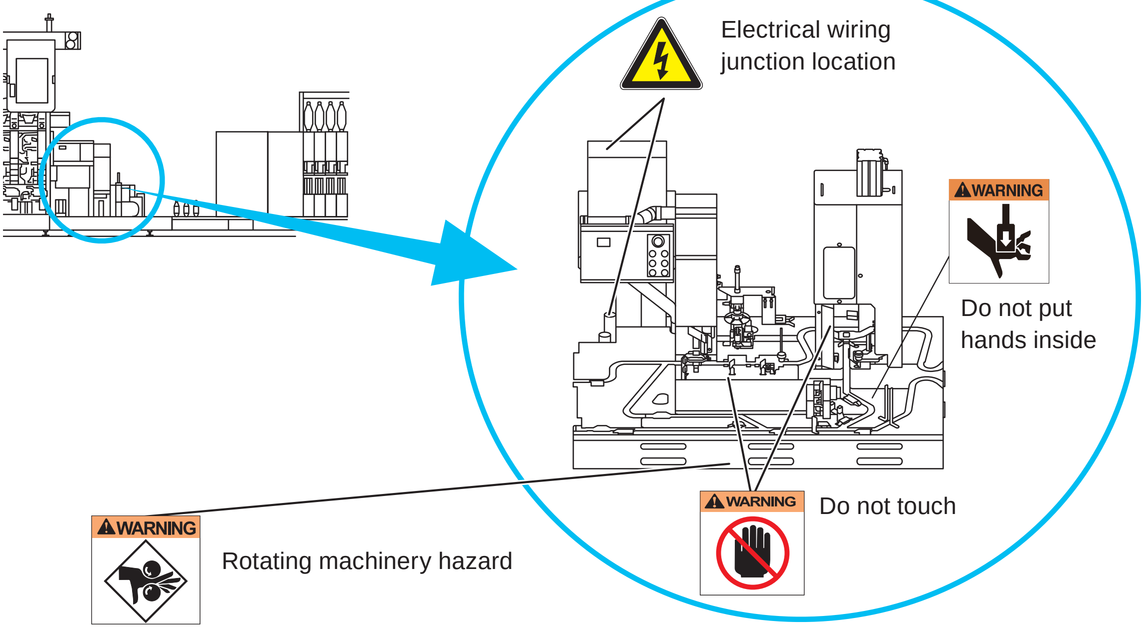


Rotating machinery hazard

- **CBF (Bobbin Tray type)**


- Parts feeder type
WARNING
Do not touch
DANGER
Entry prohibited
Electrical wiring junction location
WARNING
No step (Do not step.)
WARNING
Do not touch
WARNING
Rotating machinery hazard
- Vertical conveyor type
WARNING
Do not touch

- **CBF (Link Coner type)**


Electrical wiring junction location
WARNING
Do not put hands inside
WARNING
Do not touch
WARNING
Rotating machinery hazard

Sec 5 Noise Emission Data

[Measurement Environment]

- Measurements taken at 1 m distance and 1.6 m height from operating position.
- Measuring instrument contains an uncertainty level of 4 dB (A).

[Operating conditions]

Item	Setting value
Winding speed (m/min)	1200
Winding unit	20
Air splicer type(air pressure)	G2Z (0.65 MPa)
Measurement load (frequency of splicing x blower frequency)	1. Low noise (56 Hz & Without splicing) 2. Medium noise (70 Hz & Splicing once/winding unit/min) 3. Maximum noise (81 Hz & Splicing twice/winding unit/min)
Blow cleaner	---
Dust collector	---

[Measuring Result]

Load	Sound intensity level [dB (A)]	Sound power level [dB (A)]
1. Low noise	75.6	---
2. Medium noise	80.9	106
3. Maximum noise	84.0	109

Sec 6 Emergency Stop

Operation Method

If an emergency stop operation is necessary, use one of the following methods to perform the operation.
When this operation is performed, all operations on the machine immediately stop.

- **Turn OFF the main switch on the main control box. (Refer to Chapter 1, 6-1)**
- **Press the emergency stop switch. (Refer to Chapter 1, 6-2)**

CAUTION

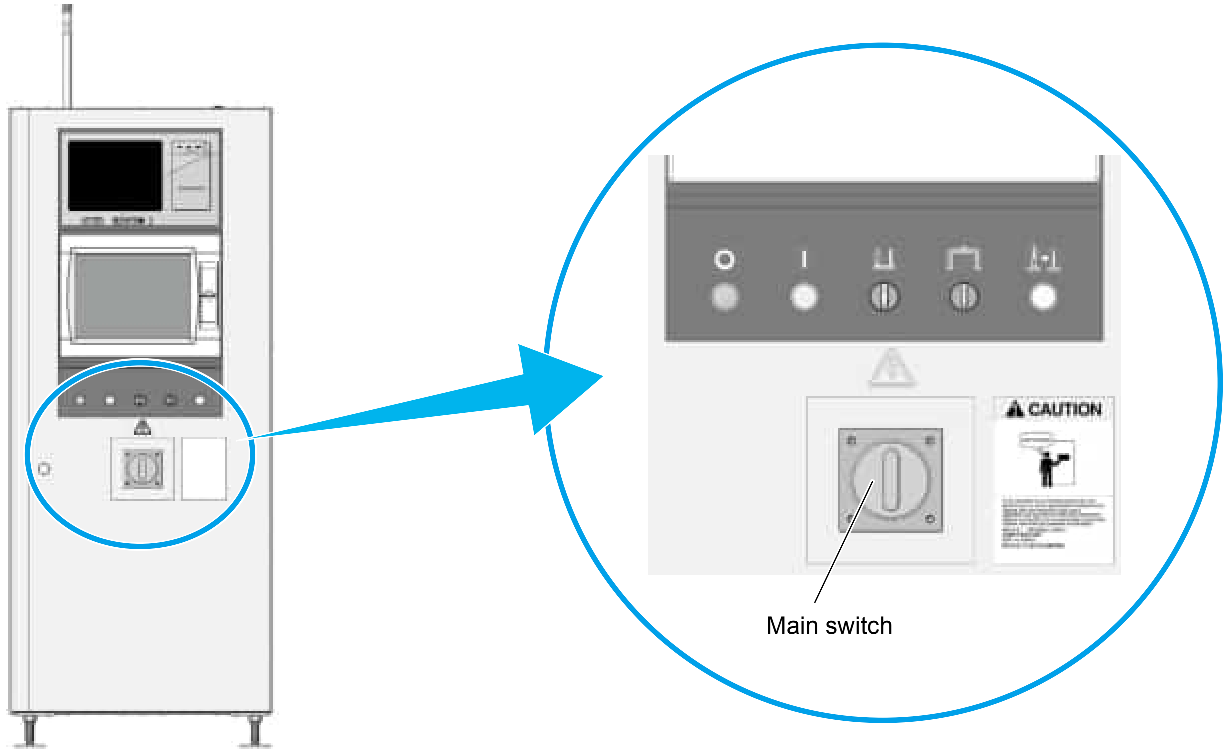
Performing an emergency stop during operation causes undue stress on the machine.
As a result, do not perform an emergency stop operation unnecessarily, or unless it is an emergency.

Release Method

When releasing the emergency stop and re-starting the machine, perform the following steps.

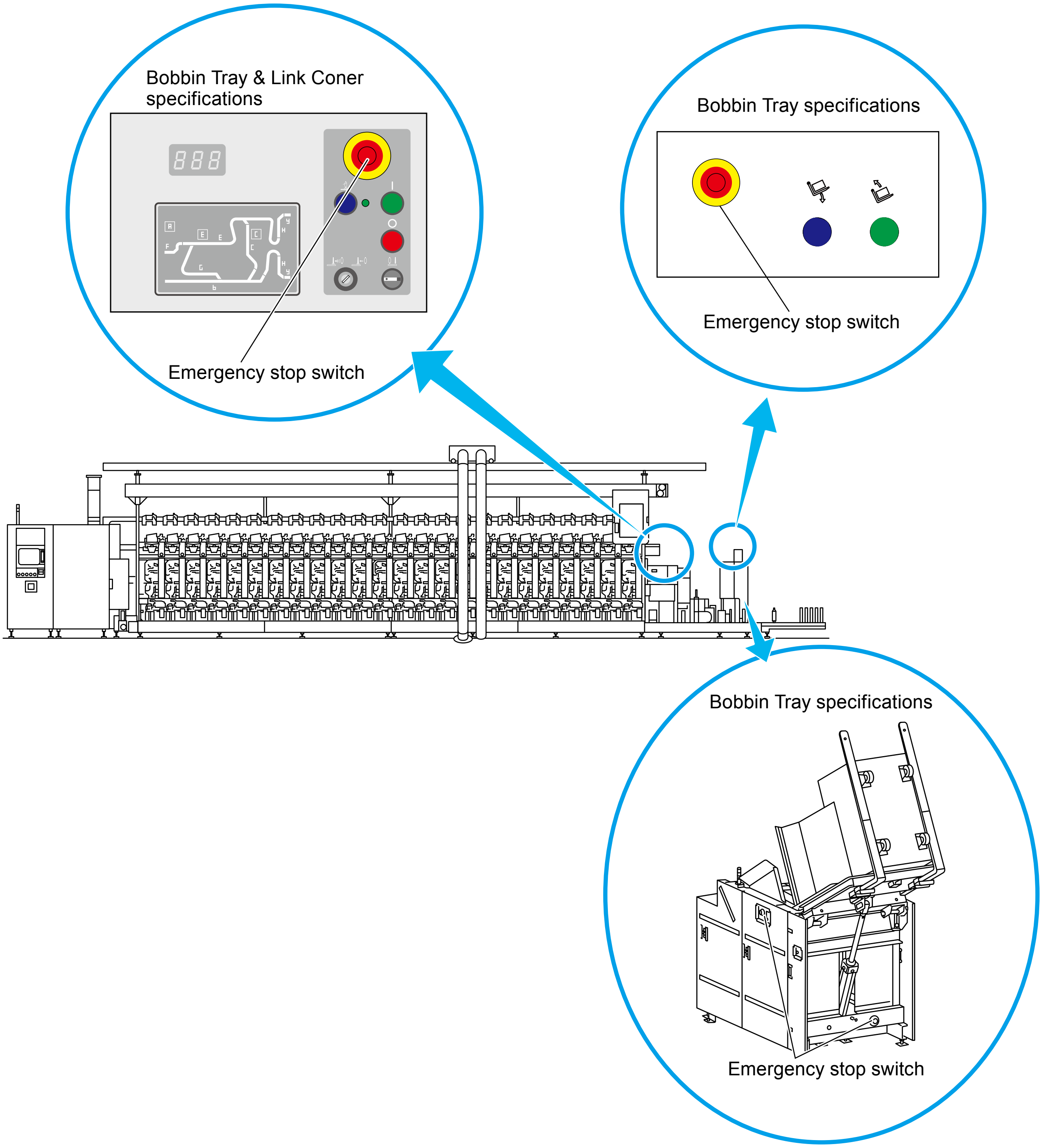
1. **Check the area around the machine to ensure safe operation.**
2. **Make sure the area behind the machine is cleared of all personnel (maintenance, etc.).**
3. **Turn ON the main switch.**
4. **When you perform an emergency stop operation using the emergency stop switch on the CBF or the supply unit, use the same switch to release it.**
5. **Press the start button.**
   The machine operation will re-start.

6-1 Main Switch Location



6-2 Location of Emergency Stop Switches

The machine’s emergency stop switches are located in the following places.


Bobbin Tray & Link Coner specifications
888
Emergency stop switch
Bobbin Tray specifications
Emergency stop switch
Bobbin Tray specifications
Emergency stop switch

Sec 7 Machine Operation Stopped Due to Power Outage & Lightning Strike

Precautionary Measure Against Lightning

If there is risk of lightning, halt operation and turn the main switch OFF.

Machine Stopped Automatically Due to Power Outage

If the power supply is halted instantaneously by a lightning strike or a problem with the equipment, the machine stops automatically when necessary.

- The main switches on the main control box and each winding unit are equipped with a power supply monitoring function.
- The main switch trips during a power outage.
- If the voltage for the winding unit drops below a set level during winding, the yarn is cut and the drum drive is stopped.

Restarting After Machine Stops Due to Lightning Strike & Power Outage

- **When the main switch has tripped**

1. **Move the main switch from the TRIP position back to the OFF position, and then turn it ON.**
2. **Turn on the machine operation switch.**
   The machine operation will re-start.

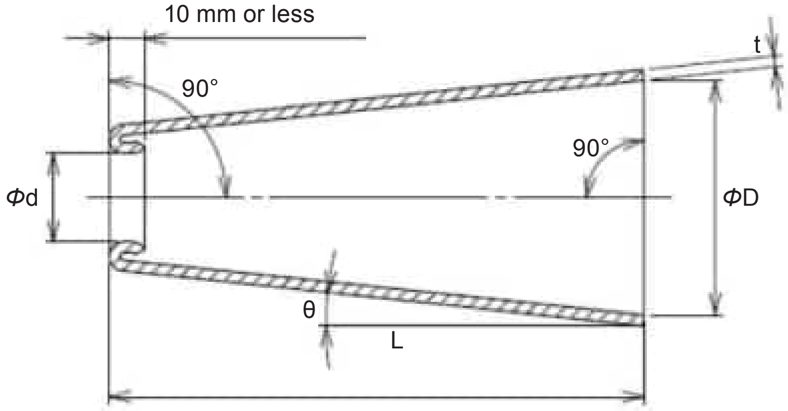
- **When the power supply has suddenly stopped causing the winding unit operation to stop**
  When the winding unit detects that the power supply has stopped because of a lightning strike or a problem with the equipment, the unit stops and indicates an operator call. “ 62 ” is shown on the unit status display.

1. **Press the reset switch on the winding unit.**
   The winding operation re-starts.

Sec 8 Take-up Tube Precautions

The accuracy and strength of the take-up tube are important.
Insufficient accuracy and strength may cause the package to fall off the bearing center during winding. Always use a take-up tube that meets the accuracy and strength requirements.

Accuracy

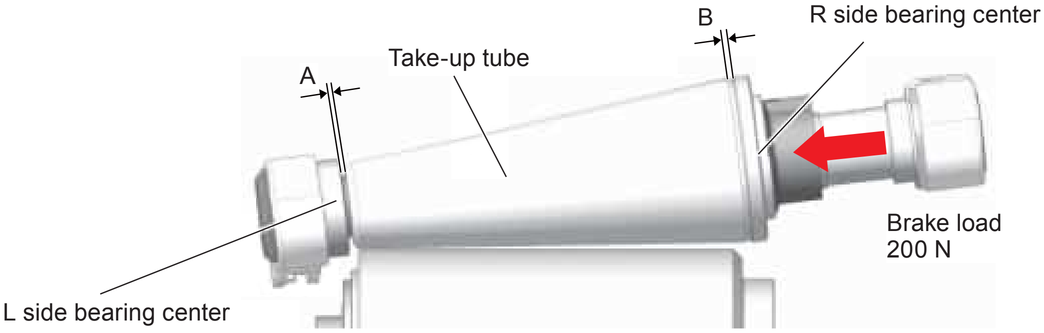


Φd on the L side	Within ± 0.2 mm
Φd on the R side	Within ± 0.2 mm
Tube length (L)	Within ± 1 mm
Tube wall thickness (t)	2 mm or more (the thickness must be uniform)
Tube fluctuation	0.6 mm or less (range of oscillation when attached to the cradle and rotating)
Tube eccentricity	No eccentricity
Tube end surfaces	Tube end surfaces are 90° relative to the center line

Strength

It is important that the take-up tube can support the package brake load (200 N) and that the inner diameter dimensions do not change (Φd, ΦD). The clearance between the bearing center and the take-up tube must satisfy the following conditions from the start to the end of the winding operation.

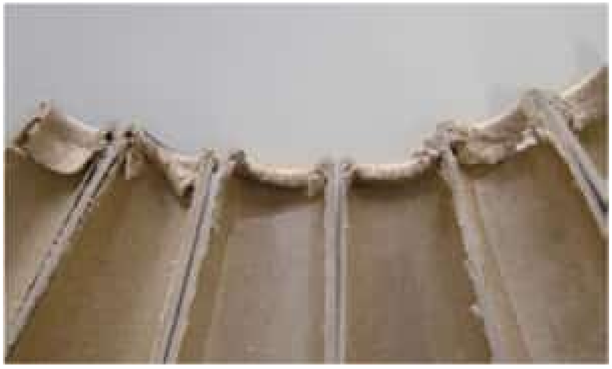
L side bearing center gap	A = 0.5 to 1.5 mm
R side bearing center gap	B = 0.5 to 1.5 mm



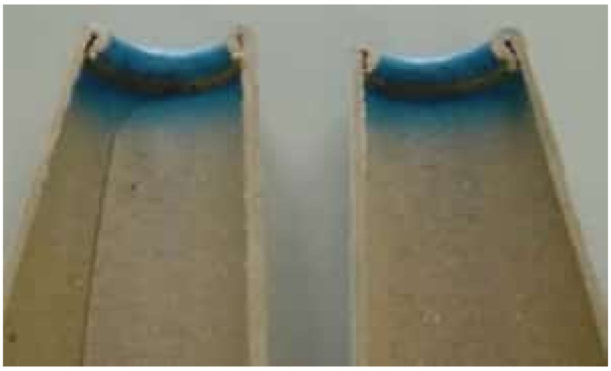
Shape & Condition

- **The L side curve shape and condition must be highly accurate.**

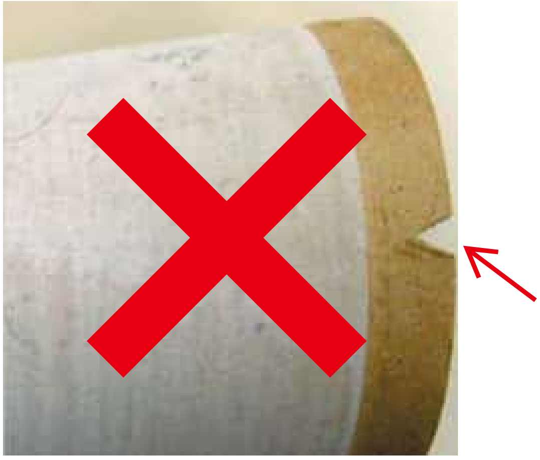
[Bad take-up tube sample]

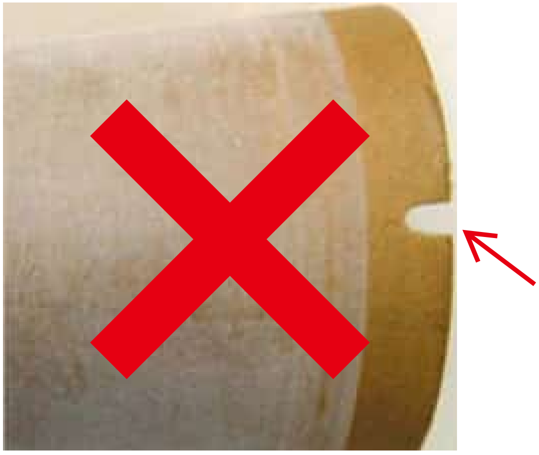


[Good take-up tube sample]



- **The R side should have no cutout.**
  Take-up tubes with a V or U-shaped cutout can easily be deformed when the package brake is activated, increasing the risk for the package to step wind or come off, and therefore their use is not recommended.





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2
Chapter

Operation

Contents

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2 **Names of Each Part** 2
  2-1 Machine Part Names
  2-2 Switch Names
  2-3 Signal Tower Indications
  2-4 Winding Unit Part Names
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Sec 1 Introduction

This chapter-details the proper operating procedures for the “Process Coner II.”
The Process Coner II is a high-performance automatic winder. Although its operation is simple, the Process Coner II equires periodic maintenance to ensure high quality yarn and efficient production.

Please use this chapter as a reference during operation. Some information may vary for your particular operation depending upon the yarn type, the yarn count, and the specifications of the Process Coner II being used at your plant.

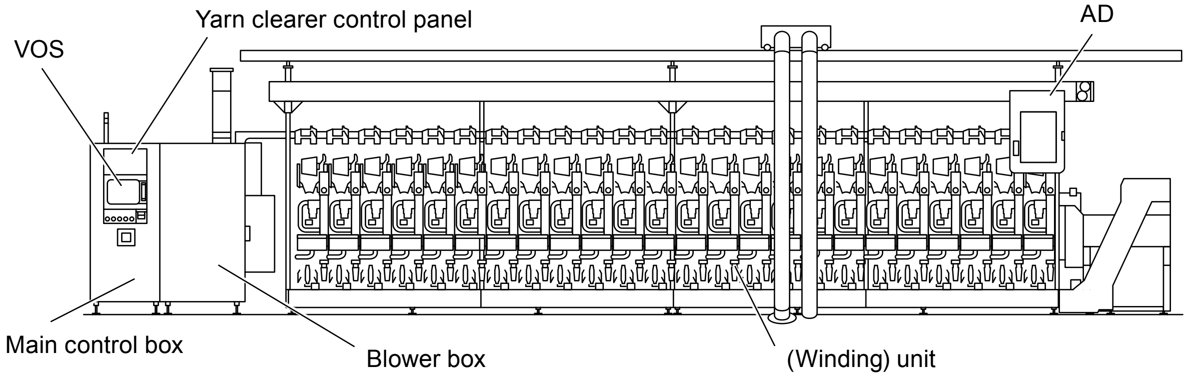
WARNING

When you need to lean several winding units forward at the same time during maintenance, etc., ensure that they are “two winding units apart.” If you lean too many winding units forward simultaneously, the entire frame may lean forward resulting in a serious accident.

Sec 2 Names of Each Part

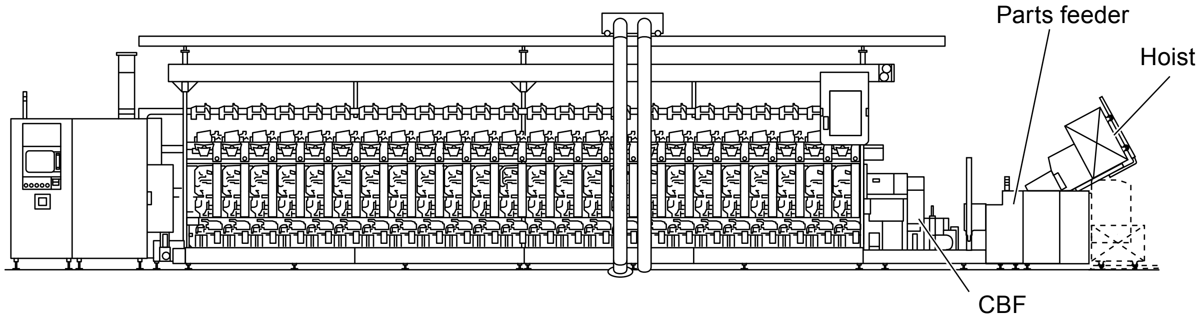
2-1 Machine Part Names

Straight Magazine Type

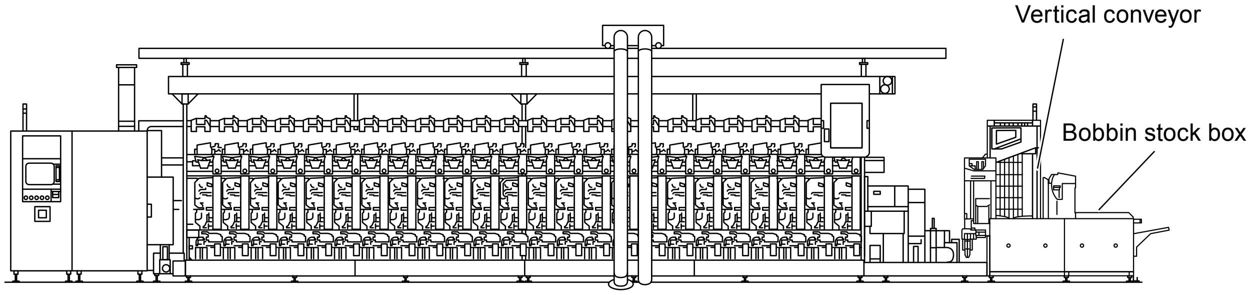

Yarn clearer control panel
VOS
AD
Main control box
Blower box
(Winding) unit

Bobbin Tray Type

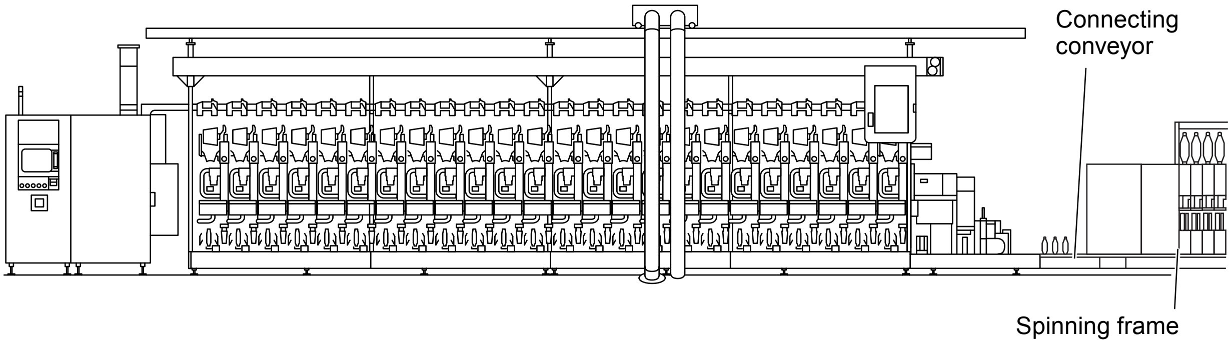
- **Parts feeder type**


Parts feeder
Hoist
CBF

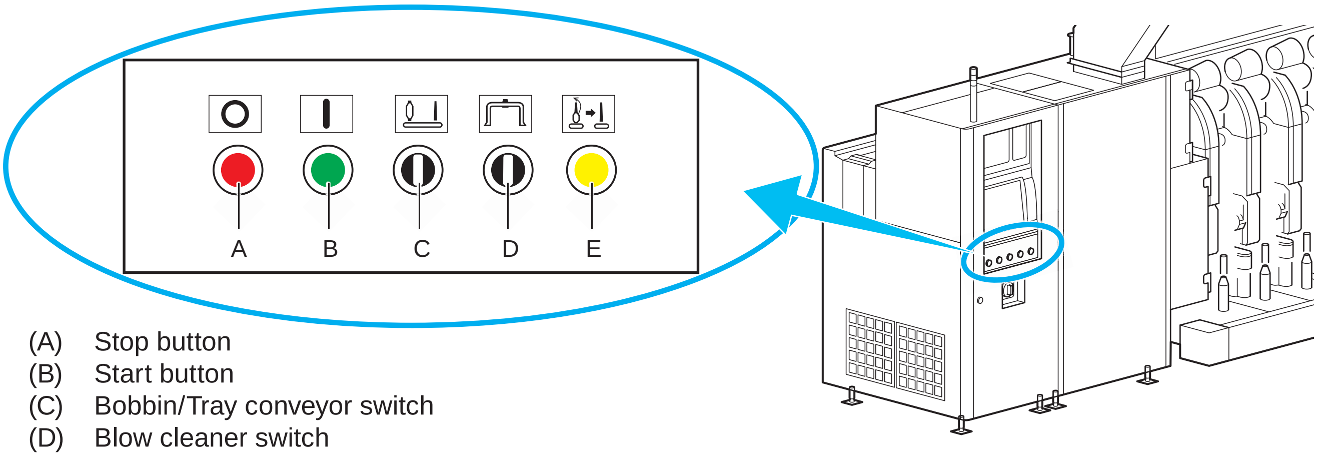
- **Vertical conveyor type**


Vertical conveyor
Bobbin stock box

Link Coner Type


Connecting
conveyor
Spinning frame

2-2 Switch Names



- (A) Stop button
- (B) Start button
- (C) Bobbin/Tray conveyor switch
- (D) Blow cleaner switch
- (E) Cleaning mode button

2-3 Signal Tower Indications

[The signal tower on top of the main control box]

	Lit	Flashing	
		At 0.2-second intervals	**At 2-second intervals**
Red	- CBF error - AD error	PC-LINK alarm	Fixer call
Yellow	Waiting for spinning-bobbins from the spinning frame	---	Spinning frame problem
Green	Operating	---	In cleaning mode (CYCLE STOP)

[The out end (OE) signal tower of the winder]

	Lit		
	At 0.2-second intervals	**At 1-second intervals**	**At 2-second intervals**
Red	- Emergency stop - Machine alarm - Unit fixer call*[1] - Feed conveyor problem - CBF error - Steam setter problem	CBF bypass line full (for the Bobbin Tray specification only)	Spinning frame problem
Yellow	- Unit operator call*[2] - Package conveyor alarm - CBF bypass line full - Spin inspector conveyor full - Delay in supplying at the supply part*[3] - The hoist at the upper end*[3]	---	---

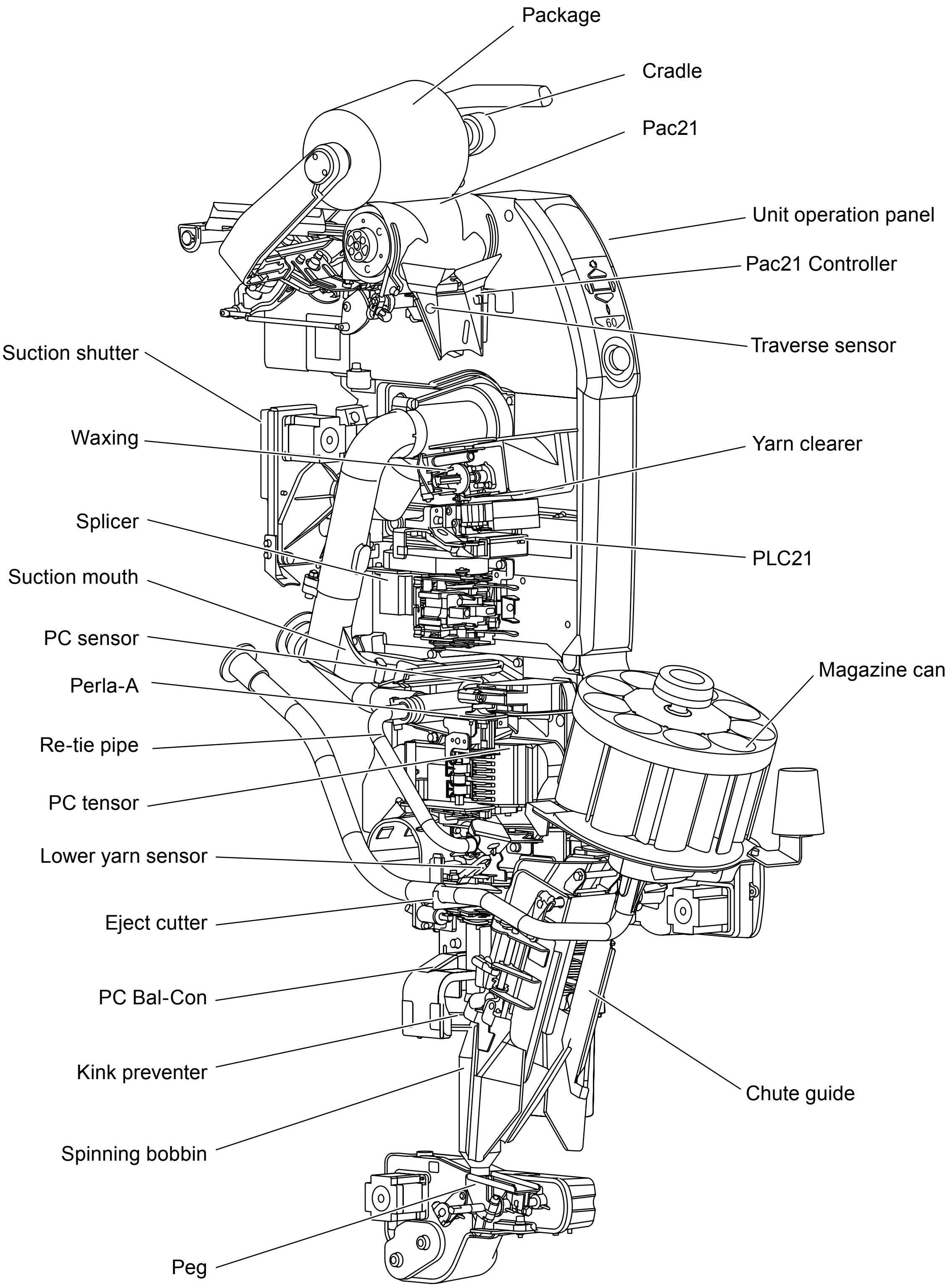
*[1] Red light flashes when more winding units than the number specified in the VOS setting “No. of winding units" require fixer call.

*[2] Yellow light flashes when more winding units than the number specified in the VOS setting “No. of winding units” require operator call.

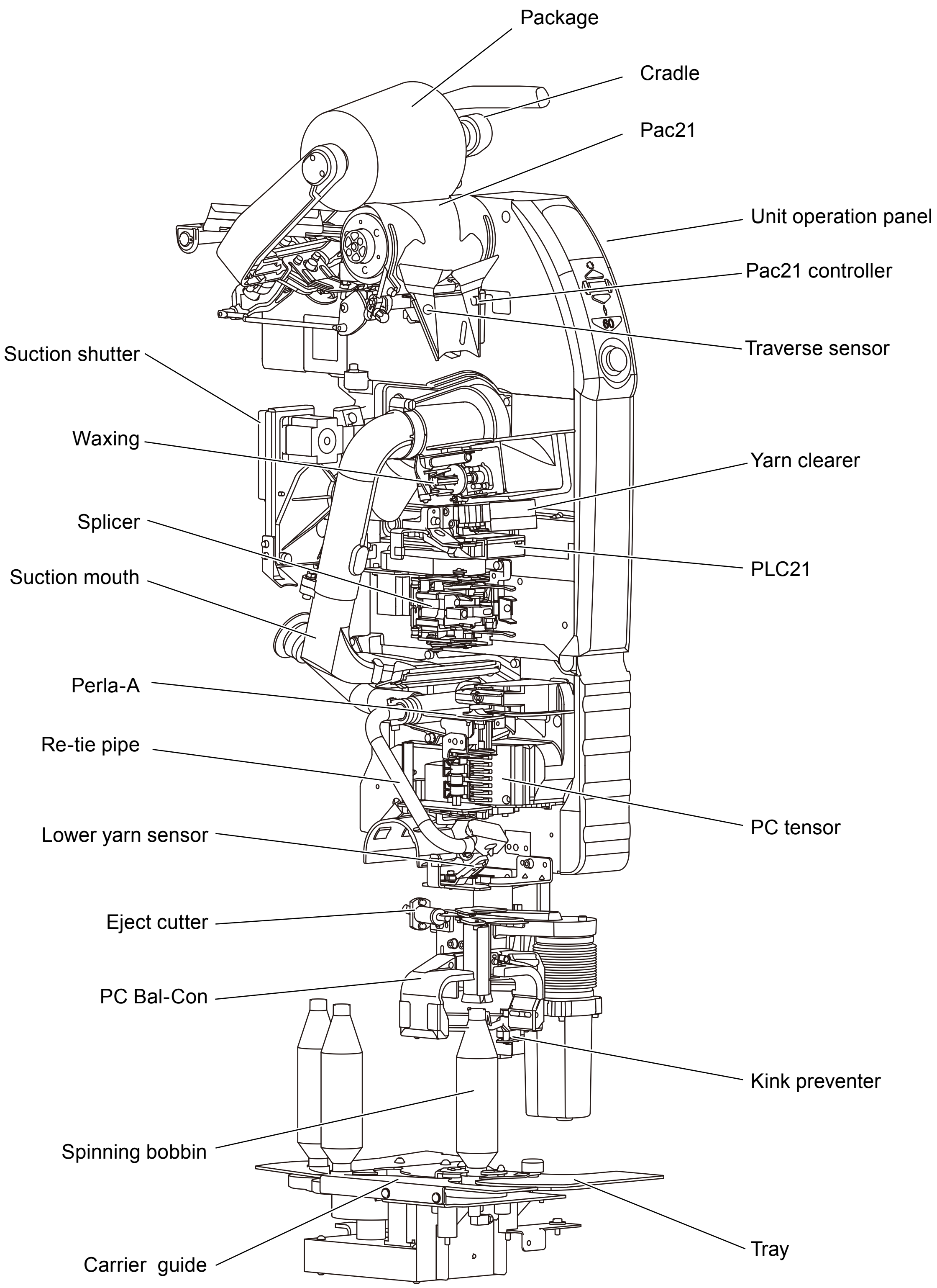
*[3] For details, refer to Chapter 8G (option).

2-4 Winding Unit Part Names

Straight Magazine Type


Package
Cradle
Pac21
Unit operation panel
Pac21 Controller
Traverse sensor
Suction shutter
Waxing
Yarn clearer
Splicer
PLC21
Suction mouth
PC sensor
Magazine can
Perla-A
Re-tie pipe
PC tensor
Lower yarn sensor
Eject cutter
PC Bal-Con
Kink preventer
Chute guide
Spinning bobbin
Peg
60

Bobbin Tray Type (Link Coner Type)

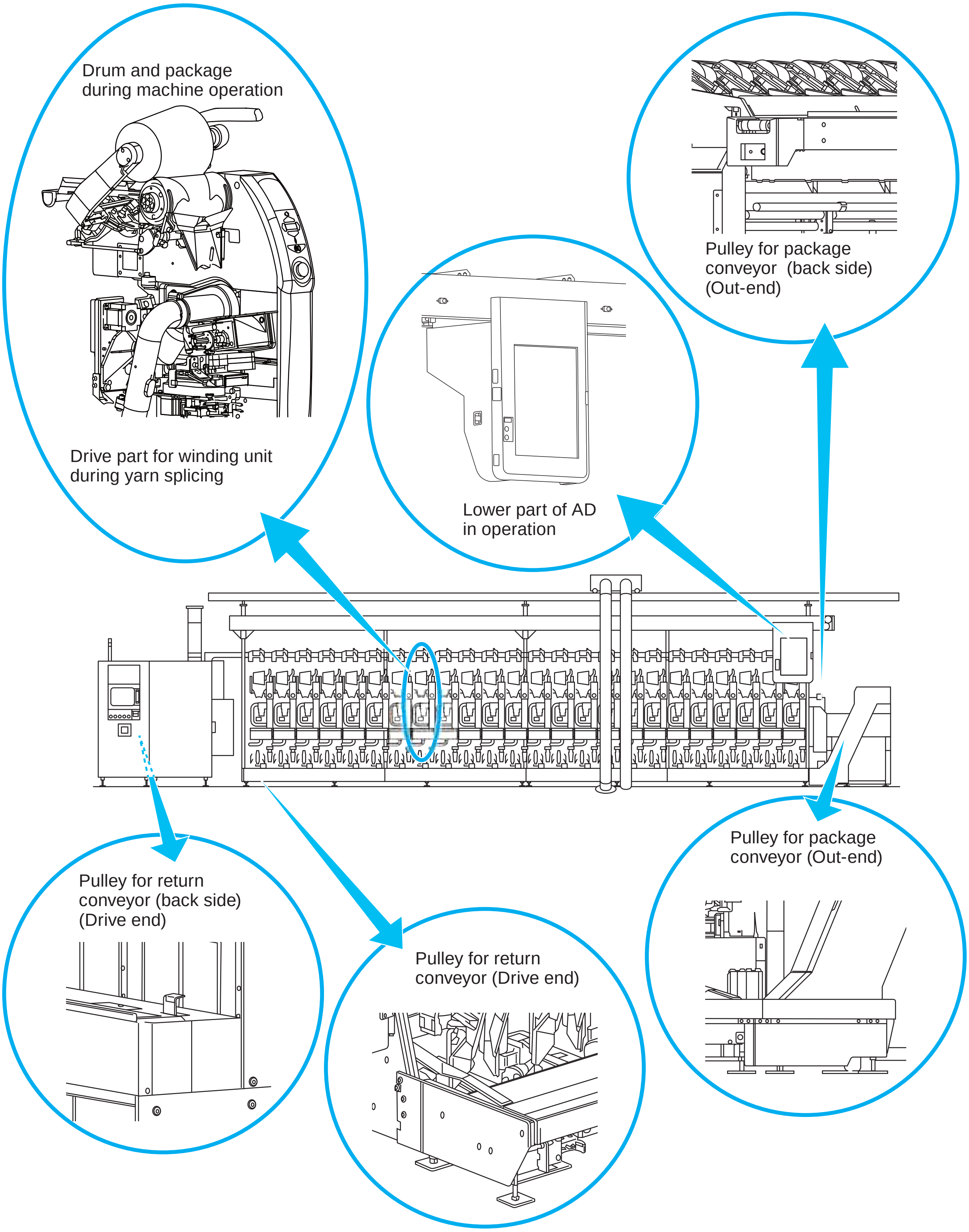

Package
Cradle
Pac21
Unit operation panel
Pac21 controller
Traverse sensor
Suction shutter
Waxing
Yarn clearer
Splicer
PLC21
Suction mouth
Perla-A
Re-tie pipe
PC tensor
Lower yarn sensor
Eject cutter
PC Bal-Con
Kink preventer
Spinning bobbin
Tray
Carrier guide

Sec 3 Safety Precautions

3-1 Straight Magazine Type

WARNING

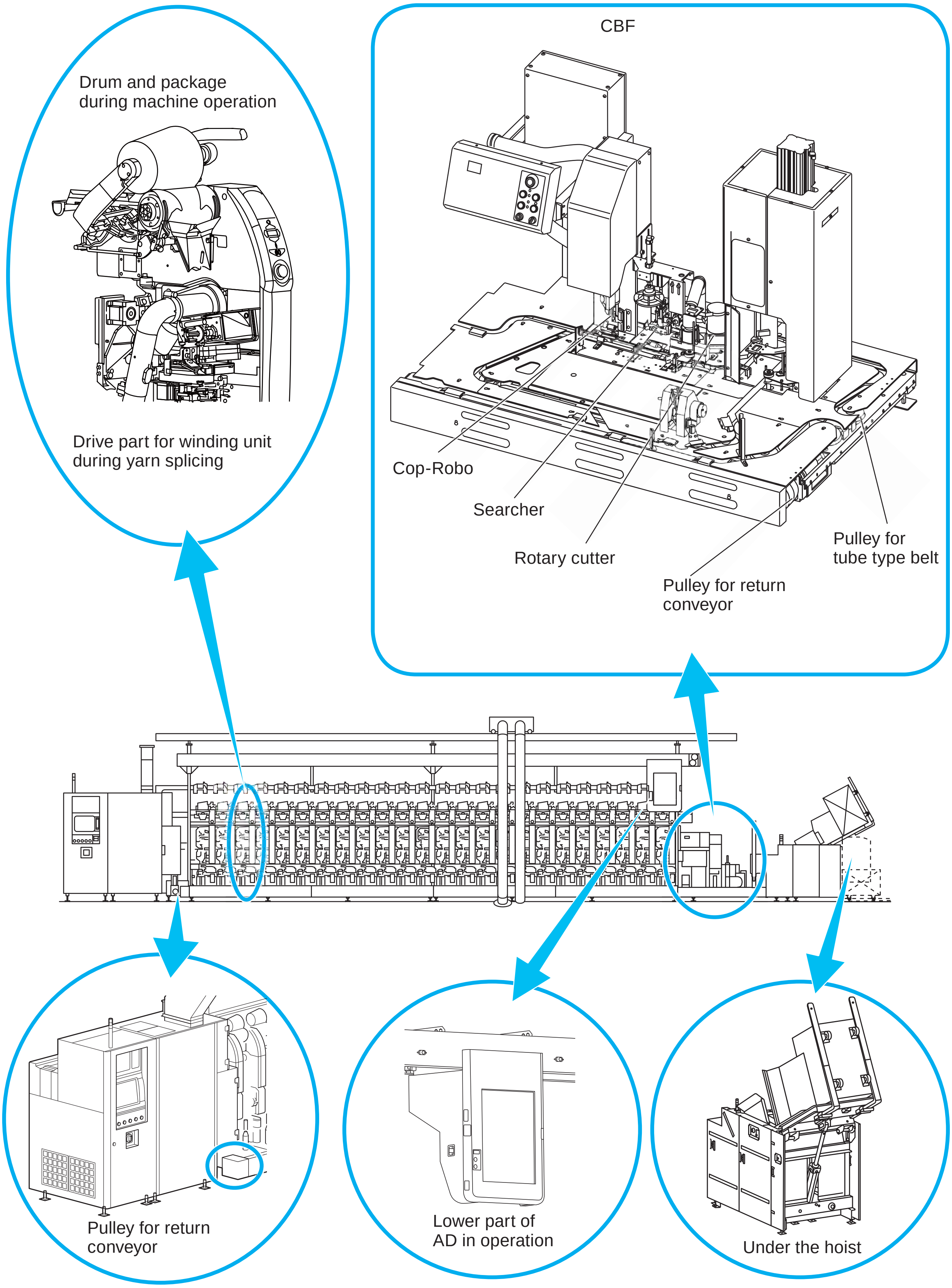
Operators should never touch any part of the drive section noted below while the machine is operating, as it is extremely dangerous.

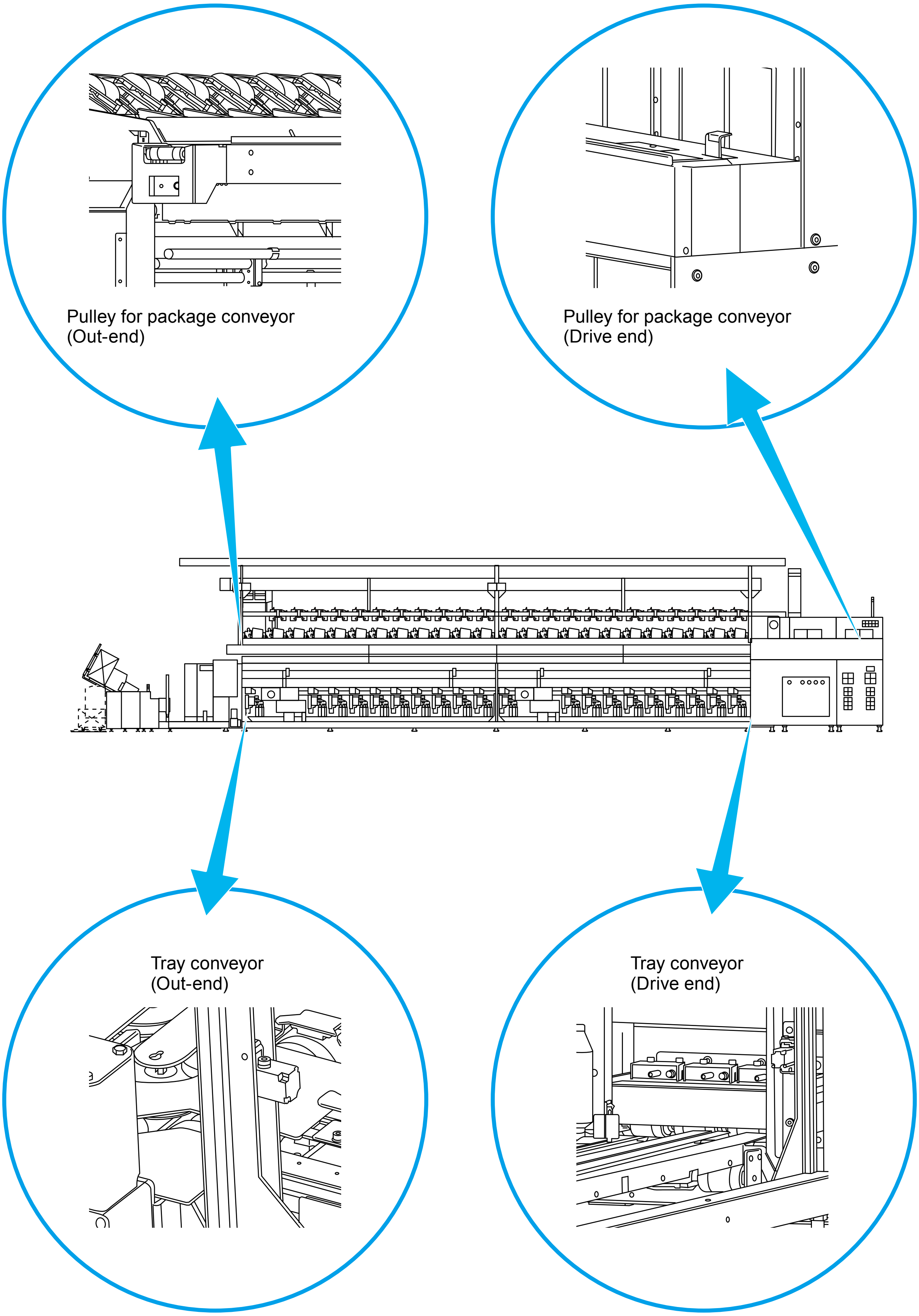

Drum and package
during machine operation
Drive part for winding unit
during yarn splicing
Lower part of AD
in operation
Pulley for package
conveyor (back side)
(Out-end)
Pulley for return
conveyor (back side)
(Drive end)
Pulley for return
conveyor (Drive end)
Pulley for package
conveyor (Out-end)

3-2 Bobbin Tray Type (Link Coner Type)

WARNING

Operators should never touch any part of the drive section noted below while the machine is operating, as it is extremely dangerous.

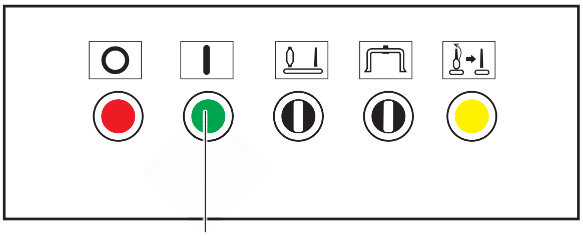

Drum and package
during machine operation
Drive part for winding unit
during yarn splicing
CBF
Cop-Robo
Searcher
Rotary cutter
Pulley for return
conveyor
Pulley for
tube type belt
Pulley for return
conveyor
Lower part of
AD in operation
Under the hoist


Pulley for package conveyor
(Out-end)
Pulley for package conveyor
(Drive end)
Tray conveyor
(Out-end)
Tray conveyor
(Drive end)

Sec 4 Starting Machine Operation

4-1 Starting Continuous Operation (Restarting after suspending operation/cleaning)

1. **Inspect the area around the machine to ensure safe operation.**
   The area behind the machine must be cleared of all personnel.
2. **Press the start button.**
   Automatic operation will begin about 30 seconds after the start button is pushed.



- **When the standby function* is OFF during machine startup**

Once the blower is enabled and the static pressure increases, the winding unit will begin automatic operation.

- **When the standby function is ON during machine startup**

The winding unit goes into standby mode*.
After pressing the start button again, the winding unit will begin automatic operation once the static pressure has increased.

* When the winding unit is started and the blower is enabled, the yarn threading operation is possible.

* Refer to the VOS in Chapter 7 “<12100> Basic Machine Settings,” for details on the standby function during machine startup.

* In the hot splicer specification, check if the nozzle temperature rises within one minute after the machine starts. (Refer to Chapter 4Hd)

4-2 Yarn Threading Standby

Machine Settings

1. **Turn ON the main switch.**
2. **Pressing the unit alarm reset button (middle) stops the winding unit temporarily.**
3. **On the VOS screen, set the winding conditions.**
4. **Set the yarn type, yarn count, and sensitivity level on the yarn clearer settings screen.**

   * Refer to the instruction manual for details on each one.

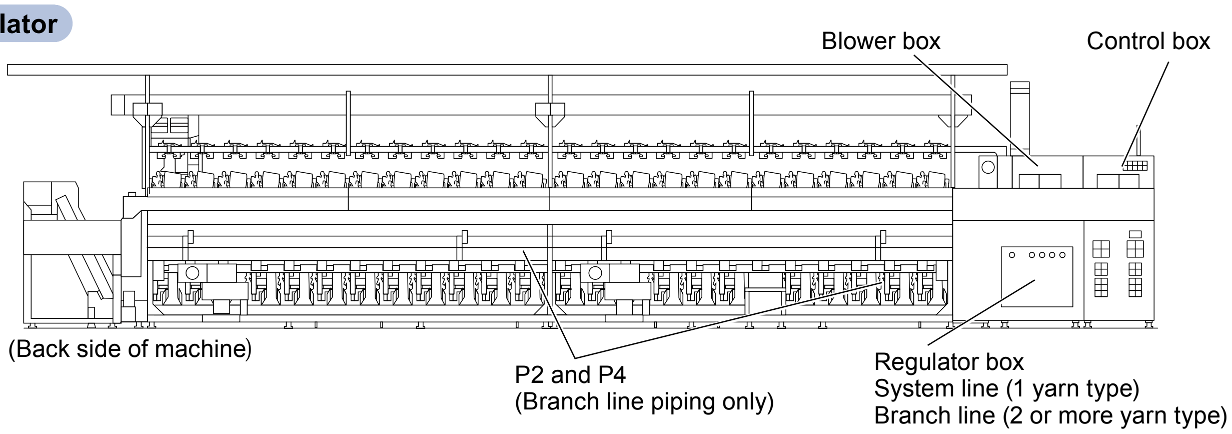
CAUTION

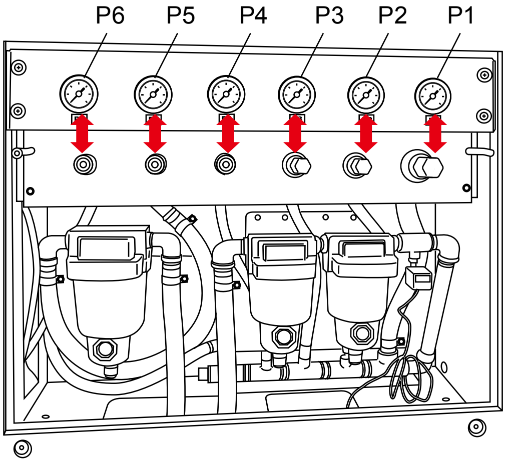
Before setting the sensitivity level, wait for more than 10 minutes after the main switch is turned ON.

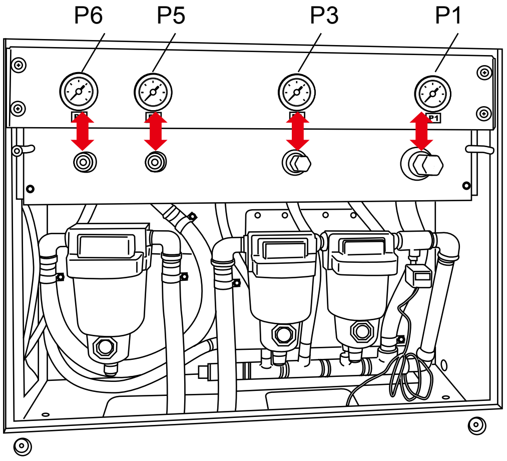
5. **Adjust the splicer air pressure using the P1 regulator and the P2 regulator.**
6. **Adjust the contact pressure using the P4 regulator.**
7. **Check the area around the machine to ensure safe operation.**
   Ensure that the area behind the machine is clear of all personnel (maintenance, etc.).
8. **Press the start button.**

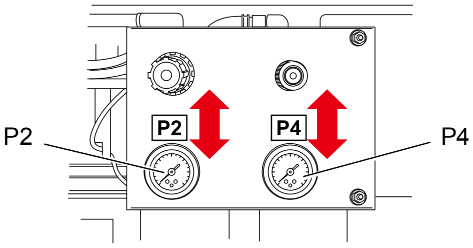
* Refer to the next page for the details on the regulator position.

Regulator


Blower box
Control box
(Back side of machine)
P2 and P4
(Branch line piping only)
Regulator box
System line (1 yarn type)
Branch line (2 or more yarn type)


P6
P5
P4
P3
P2
P1





Pipe type	Regulator quantity		Application	Pressure setting
	System line (1 yarn type)	Branch line (2 or more yarn type)		
P1	1 per machine	1 per machine	For splicer untwisting, Cleaning blast, Package conveyor, Dust collector, AD	Fixed: 0.65 MPa
P2		For each span	For splicer splicing	Setting range: 0.3 to 0.65 MPa * Adjustment depends on yarn type
P3		1 per machine	Contact pressure, Cradle lifter, Package brake, Bal-Con cutter, Magazine cutter, For blowing up	Fixed: 0.35 MPa
P4		For each span	For contact pressure adjustment	About 0.1 MPa * Adjustment depends on winding conditions
P5		1 per machine	For Perla-A (option)	About 0.2 MPa * Adjustment depends on hairiness of yarn
P6		1 per machine	For take-up tube support	Fixed: 0.1 MPa

* For "1 per machine," the regulator is behind the blower box, and "for each span," the regulator is on the right side when looking at the span from the back.
* Refer to Chapter 4 for details on the setting values of each item.

4-3 Yarn Threading

Once the yarn threading standby is enabled, the yarn threading operation can be performed by the AD or by the operator.

Supplying the Winding Units with Spinning Bobbins

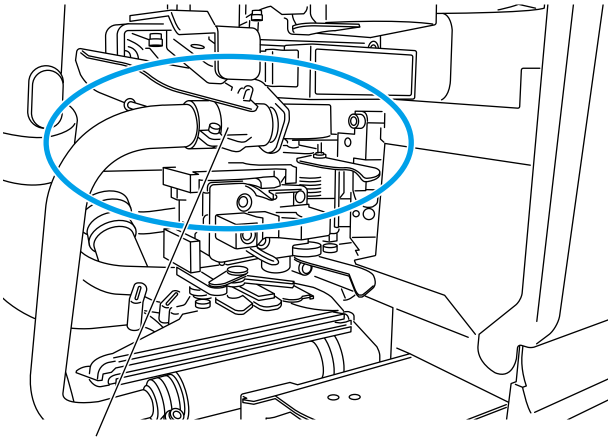
1. **Supply the winding units with spinning bobbins.**

* The supply method may vary depending on the machine type.

Magazine type	The operator supplies the winding units with the spinning bobbins
Bobbin Tray type	The CBF automatically supplies the winding units with spinning bobbins
Link Coner type	The CBF automatically supplies the winding units with spinning bobbins

Yarn Threading Standby

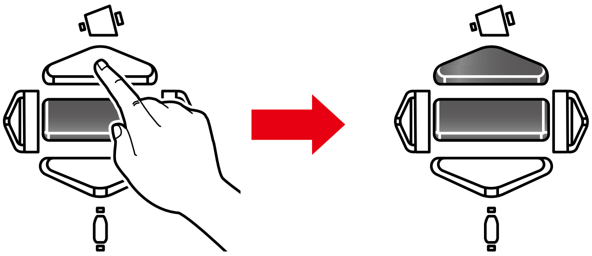
Before the threading operation is performed by the AD or by the operator, the yarn threading standby (re-tie pipe is raised) must be enabled on the machine.



Yarn threading standby
The re-tie pipe is temporarily stopped while in top end position

1. **Ensure that the bobbin is set in place on the yarn supply part.**
   If the bobbin is not set in place, set it.

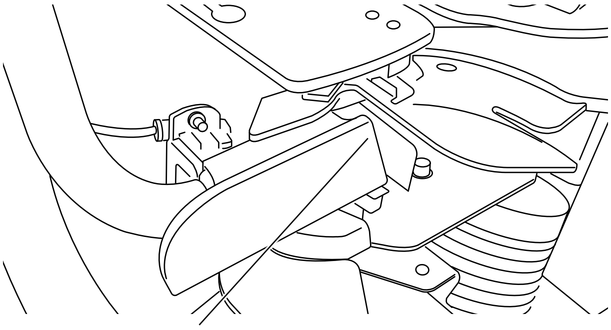
2. **Press and hold the alarm reset button (top) for more than 0.2 seconds while the machine is temporarily stopped.**
   Once the re-tie pipe picks up the lower yarn and temporarily stops in the top end position, the yarn threading standby mode is enabled.



* If the re-tie pipe fails to pick up the lower yarn, pressing the alarm reset button (top) again will lower the re-tie pipe again. When the re-tie pipe is lowered to the bottom position, press the alarm reset button (top) again.
It is possible to repeat the re-tie pipe operation as many times as required by pressing the alarm reset button.

* When there is no lower yarn, change the bobbin and perform the same operation.

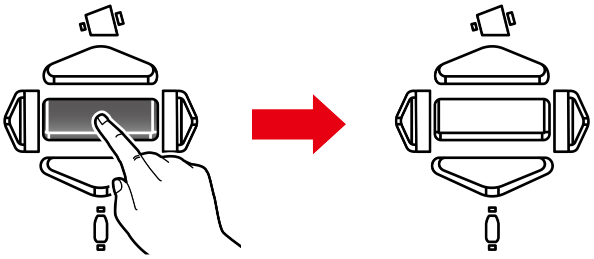
* If the alarm reset button (top) is pressed while the machine is still performing yarn threading standby operations, the re-tie pipe will lower and return to the temporary stop status.



The re-tie pipe picks up lower yarn and is raised

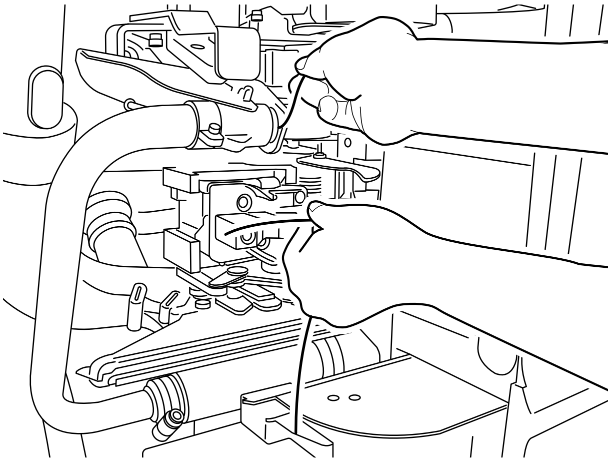
AD Yarn Threading

1. **Enable the yarn threading standby on the machine.**
2. **Press the alarm reset button (middle).**
   The operator call LED (blue) lights up and the AD goes into standby.
   The AD performs the yarn threading operation and automatically begins winding.

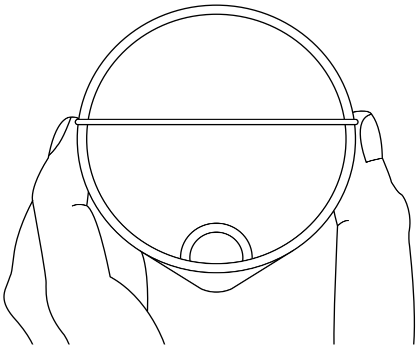


Operator Yarn Threading

1. **Enable the yarn threading standby on the machine.**
2. **Cut the yarn being sucked by the re-tie pipe with your right hand.**

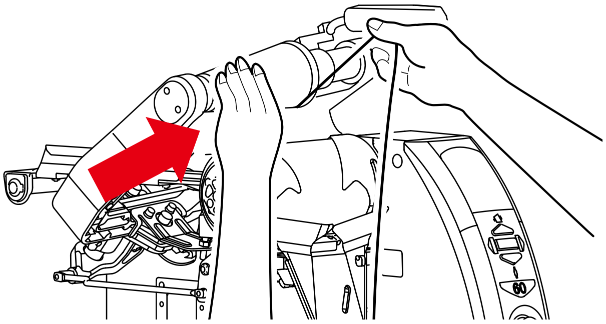


3. **Hold the take-up tube with your left hand and stretch the yarn across the bottom of the take-up tube.**
   Ensure that the yarn ends (tail end) protruding out of the take-up are as short as possible.

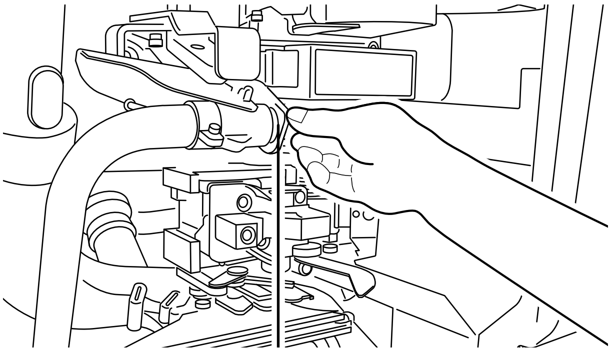


4. **Set up the take-up tube so that the yarn is located in between the take-up tube and the bearing center.**

5. **Put the yarn on the bunch guide and guide the yarn with your right hand so that it does not fall out of the bunch guide.**
   Then, perform the bunch winding operation by rotating the take-up tube with your left hand. (Wind the yarn five or six times)



6. **Ensure that the yarn is inside the yarn clearer slit.**
   * If it is not, insert the yarn into the slit by pushing it in with your hands.
   * It is essential to ensure that the yarn is inside the slit.
7. **Press the alarm reset button (middle).**
   The drum will rotate and start the winding operation.



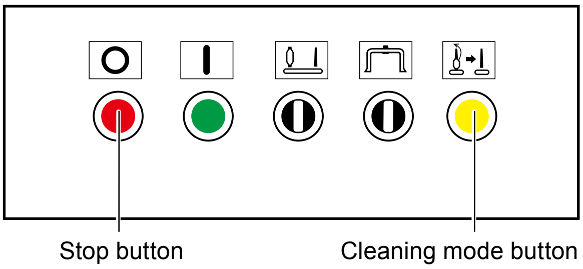
CAUTION

If the yarn is not in the slit in the yarn clearer as per step 6, the drum will not start rotating. In addition, the drum may not start rotating if it is left for a long time in yarn threading standby. If this happens, lower the re-tie pipe and perform the threading operation, starting from the temporary stop status again.

Sec 5 Stopping Machine Operation

Normal stop

This procedure is intended to bring the machine to a stop at the end of daily operation or before you take a break.



1. **Press the stop button.**
   When the standby function is OFF during a machine stoppage, the machine will stop.
   When the standby function is ON during a stoppage, the winding unit goes into standby mode*.
   Pressing the stop button again will stop the machine.

* Refer to the VOS in Chapter 7 “<12100> Basic Machine Settings,” for details on the standby function during a machine stoppage.

2. **Turn OFF the main switch when the operation has ended.**

Stopping the Machine for Cleaning

Press the cleaning mode button. The machine will stop after the ongoing winding operation for the spinning bobbin has been completed.
There is no need to press the stop button.

Emergency Stop

Refer to Chapter 1.

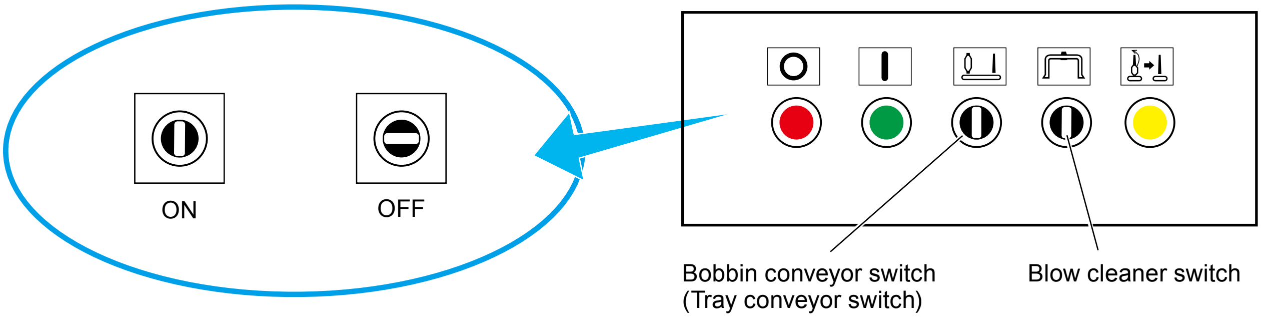
Stoppage Due to Power Failure

Refer to Chapter 1.

Stop to Replace Electrical Component

Refer to Chapter 3.

Sec 6 Starting/Stopping Each Device on Machine


ON
OFF
Bobbin conveyor switch
(Tray conveyor switch)
Blow cleaner switch

Bobbin Conveyor (Tray Conveyor) Switch Operations

* This conveyor is called a bobbin conveyor on Magazine type machines and a tray conveyor on Bobbin Tray type or Link Coner type machines.

- **Turn off the bobbin conveyor switch to stop the bobbin conveyor.**
- **Turn on the bobbin conveyor switch to restart the bobbin conveyor. Then, the bobbin conveyor will restart.**

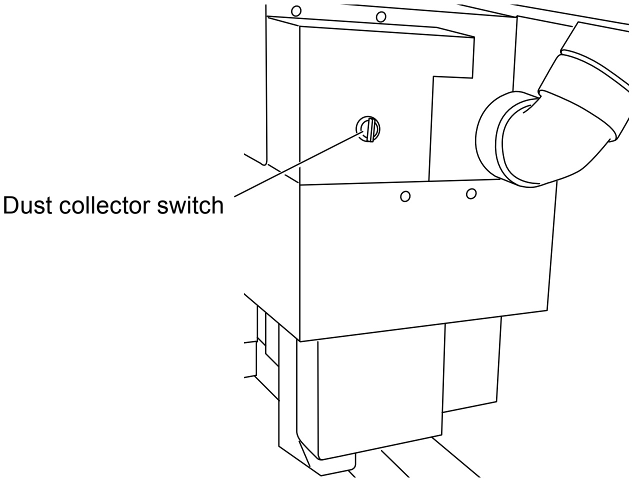
Blow Cleaner Switch Operations

- **Turn off the blow cleaner switch to stop the blow cleaner.**
- **Turn on the blow cleaner switch to restart the blow cleaner.**

Dust Collector Switch Operations

- **Turn off the dust collector switch to stop the dust collector.**
  All dust collectors on each span are disabled.

- **Turn on the dust collector switch to restart the dust collector.**
  All dust collectors on each span are enabled.


Dust collector switch

Sec 7 Stoppage During Winding Unit Operation

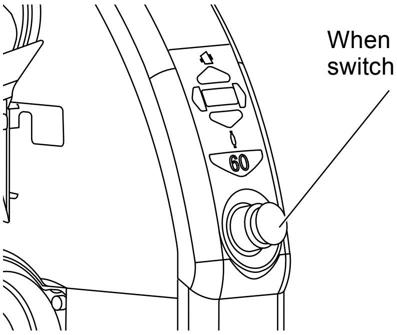
Listed below are three ways to stop the winding unit during operation.

Stopping Operation

- **When the unit operation switch is pulled**

This stopping method is used to bring the winding unit to a full stop for a set period of time, such as during maintenance.

* When the unit operation switch is pulled, rotate it to the left to lock it in place. This safety feature prevents the machine from being turned ON even if the switch is pressed accidentally.



When the unit operation switch is pulled

- **Resetting method**

Rotate the unit operation switch to the right to release the lock and push it in.

Temporary Stop

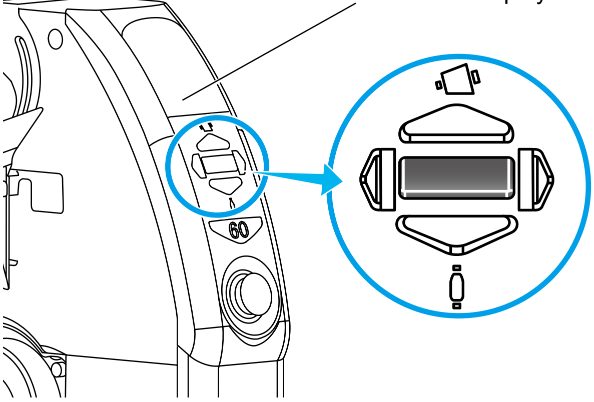
- **When there is no display on the winding unit indicator and the alarm LED (middle) is lit**

This stoppage is achieved by pressing the alarm reset button (middle) either while the power is turned on or while the unit is still in operation.

- **Resetting method**

Press the alarm reset button (middle).

* When performing a temporary stop operation due to an alarm stoppage, press the alarm reset button (middle) within 1 second of resetting the alarm.



Alarm code does not display

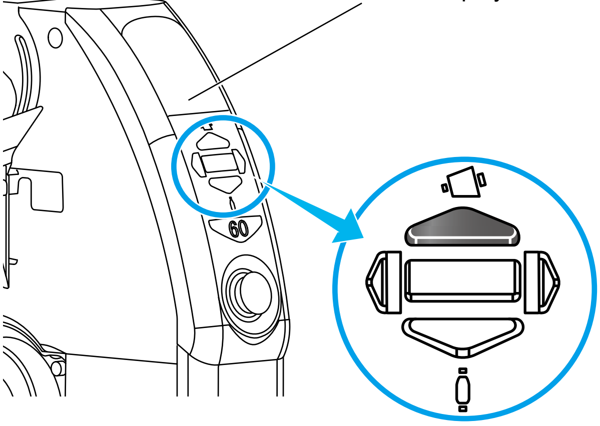
Alarm Stop

- **When an alarm code is displayed on the winding unit indicator, the alarm LED (either the top, middle or bottom) is lit**

This stoppage occurs due to an alarm.

- **Resetting method**

Press the alarm reset button that is lit.

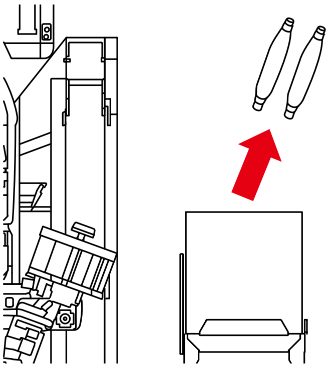


Alarm code displays

Sec 8 Controlling the Winding Unit During Operation

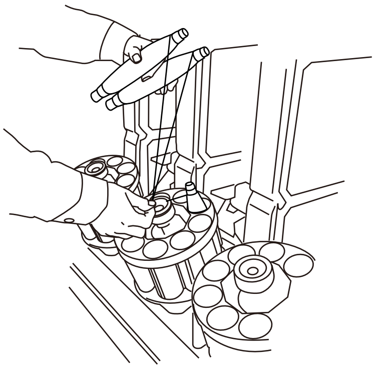
8-1 Supplying the Magazine with Spinning Bobbins (For Straight Magazine Type)

1. **Remove two spinning bobbins from the bobbin box.**



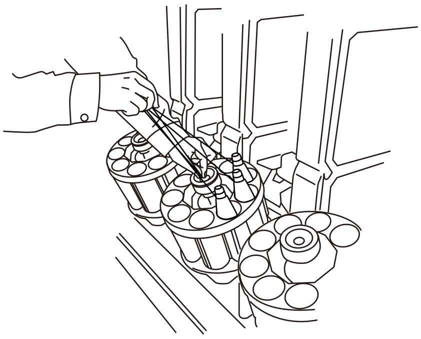
2. **Pull out the yarn ends.**

   * Completely remove the bottom winding and back winding.



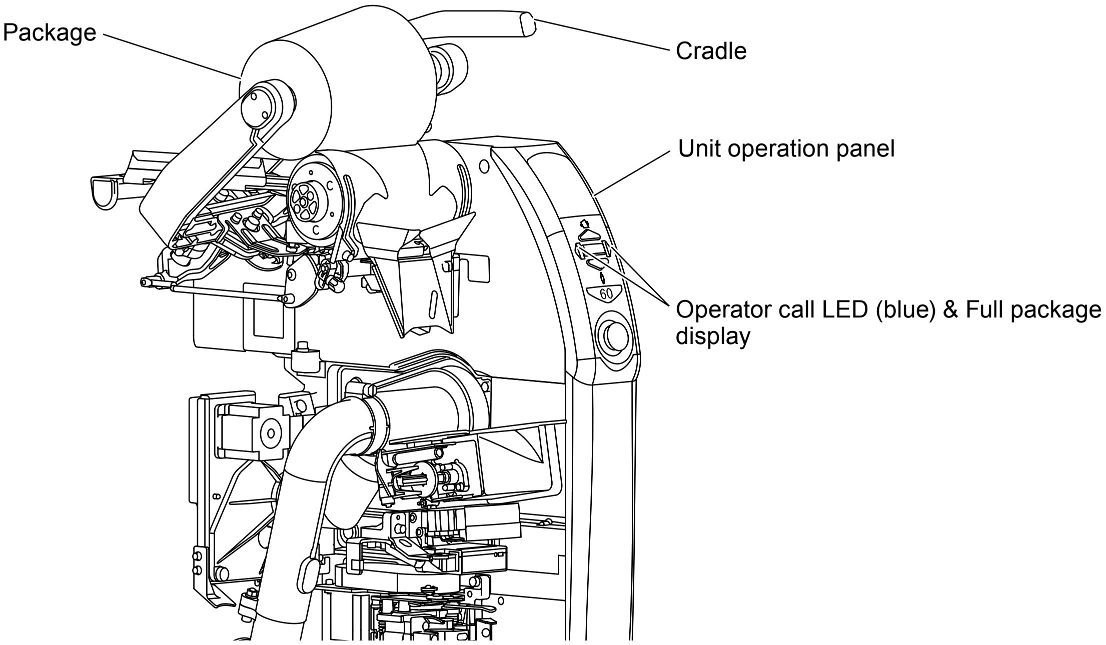
3. **Insert the bobbins into the magazine.**

   * Allow more than 40 cm of the end of the yarn to be sucked in.



4. **Perform this operation (supplying the two bobbins) at each winding unit in order.**

   * Under normal conditions, the magazine does not require eight spinning bobbins to be supplied at once.



When Equipped with an AD

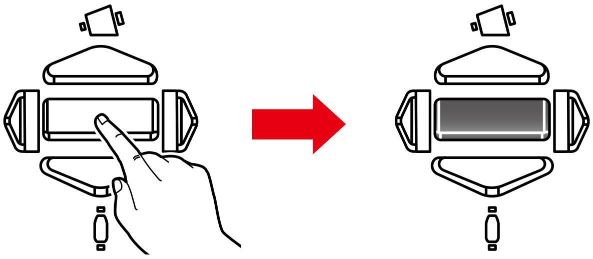
1. **The operator call LED (blue) lights up and the AD for the winding unit goes into standby mode.**
   The AD automatically performs the doffing and yarn threading operation.

   * Whenever the yarn threading operation is performed, the winding unit yarn length counter is automatically reset.

When Not Equipped with an AD

The operator call LED (blue) lights up and the winding unit goes into standby mode for doffing.
The operator must follow the procedure below to perform the doffing and yarn threading operation.

* Whenever the yarn threading operation is performed, the winding unit yarn length counter is automatically reset.

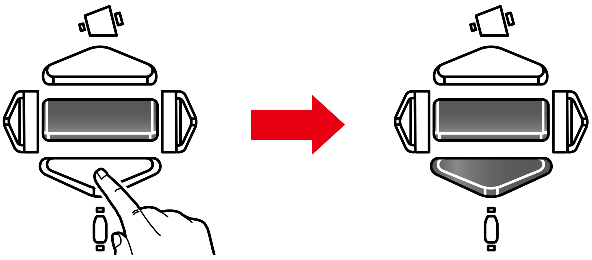


1. **Raise the cradle and roll the full package toward the back of the winding unit.**
2. **Press the alarm reset button (middle).**
   The yarn threading standby mode is enabled on the machine.
3. **Perform yarn threading operation. (Refer to Chapter 2)**

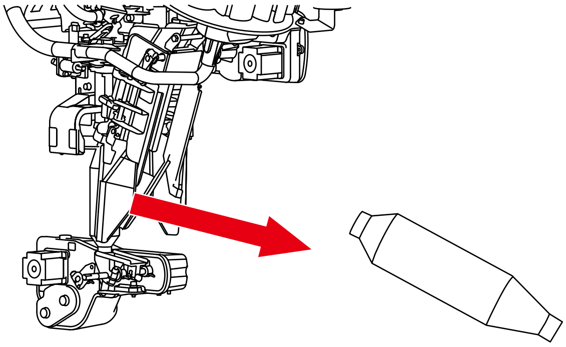
8-3 Forced Bobbin Ejection

You can manually force the supply yarn bobbin to eject.

1. **Press the alarm reset button (bottom) while the machine is temporarily stopped.**

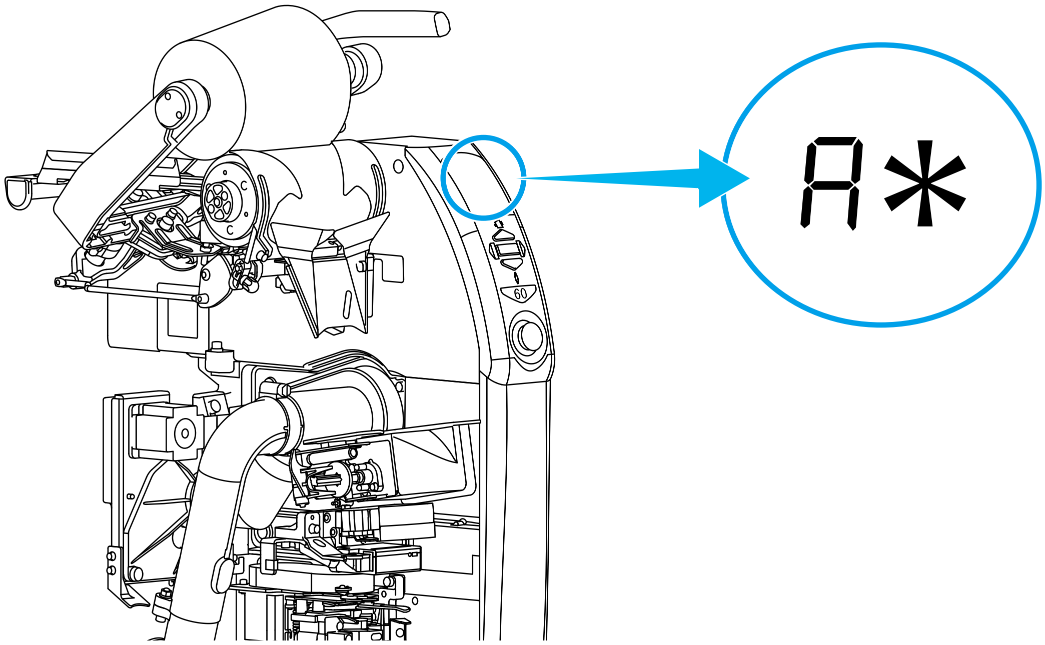


Ejecting the supply yarn bobbin stops the machine temporarily.



8-4 Resetting Method After a Yarn Threading Error

When an AD error has occurred, the winding unit indicator displays “A*.”



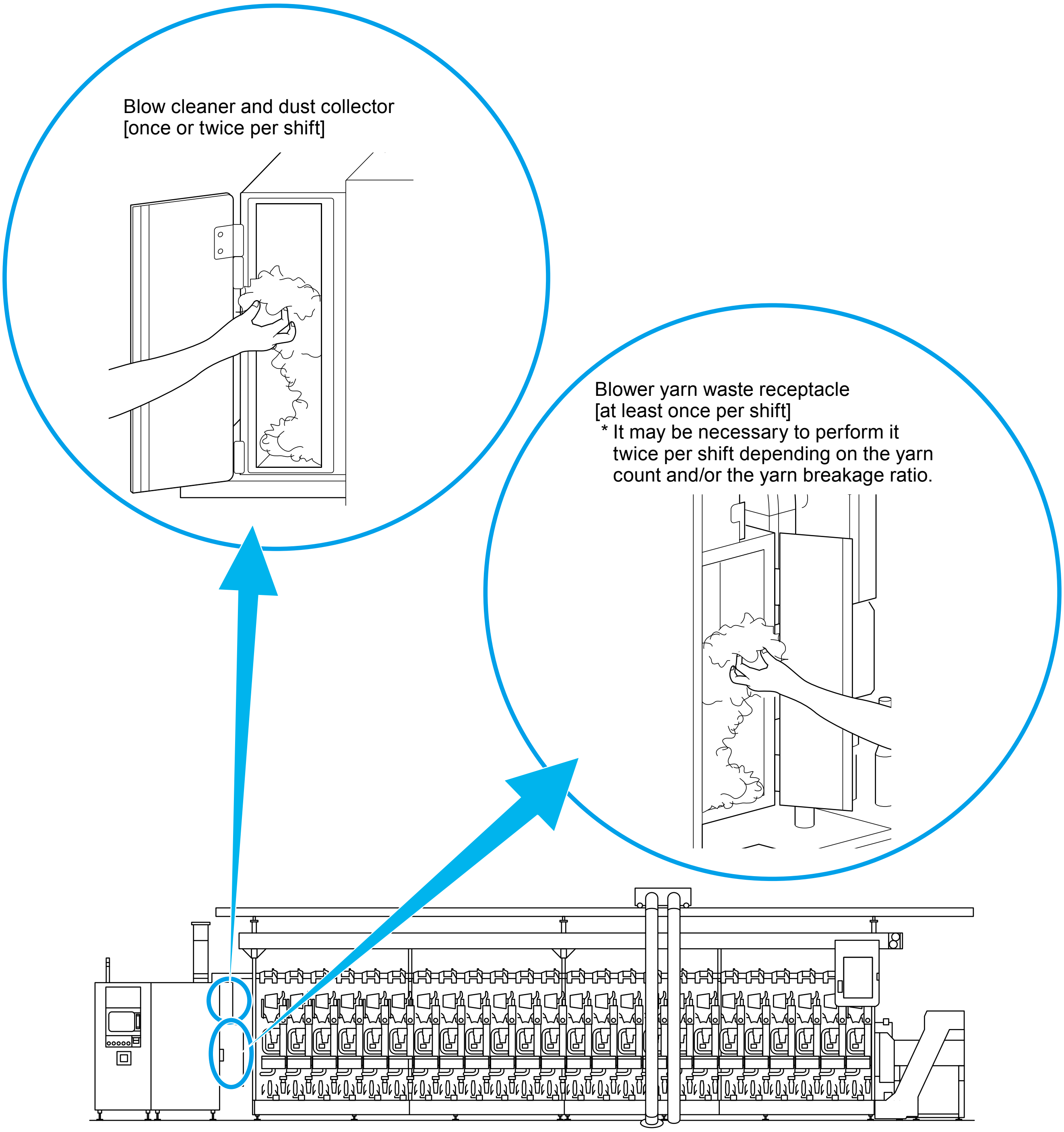
1. **Remove the take-up tube that has fallen or that is stuck to the cradle.**
2. **Press the alarm reset button (middle) to reset.**
   The AD automatically travels to perform the yarn threading operation.

Sec 9 Yarn Waste Removal

Remove any yarn waste from the blower and the blow cleaner at regular intervals.

CAUTION To avoid accidents, be sure to bring the winding unit to a stop by pushing the stop button beforehand.

WARNING **Damaged filter must be repaired or changed immediately. Using a damaged filter may result in a fire.**



Blow cleaner and dust collector
[once or twice per shift]

Blower yarn waste receptacle
[at least once per shift]
* It may be necessary to perform it twice per shift depending on the yarn count and/or the yarn breakage ratio.

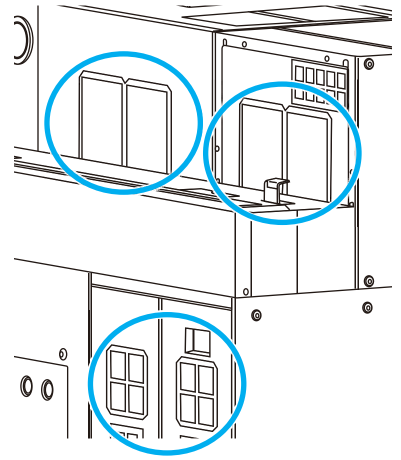
Sec 10 Cleaning

Clean the following spots of the machine in operation at regular intervals.

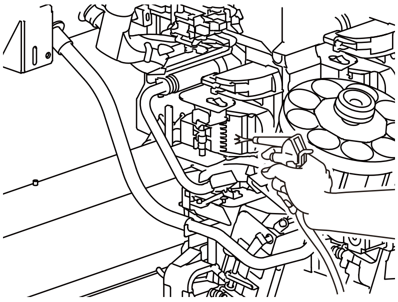
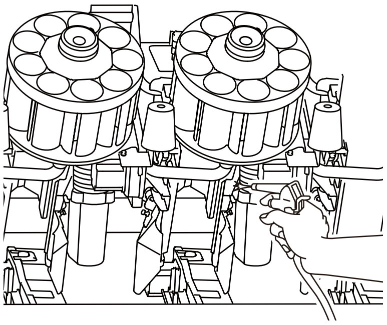
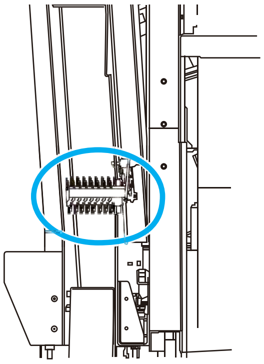
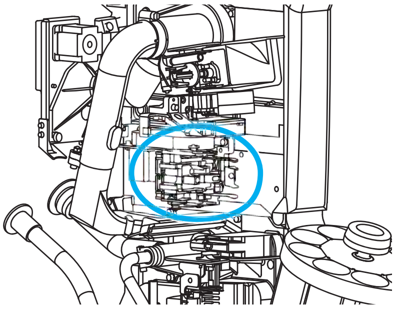
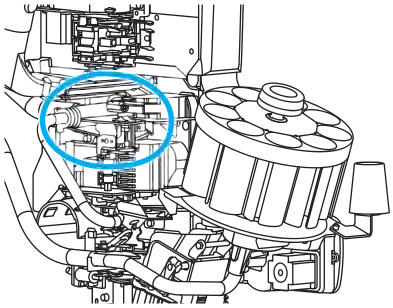
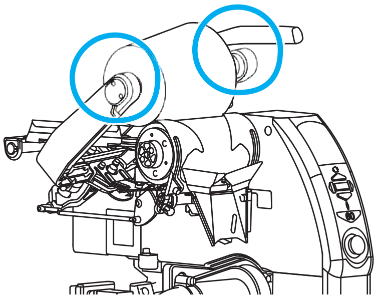
CAUTION

To avoid accidents, be sure to bring the winding unit to a stop by pushing the stop button beforehand.

Back Side of the Machine

Blower motor filter [Once a day]


Winding Units

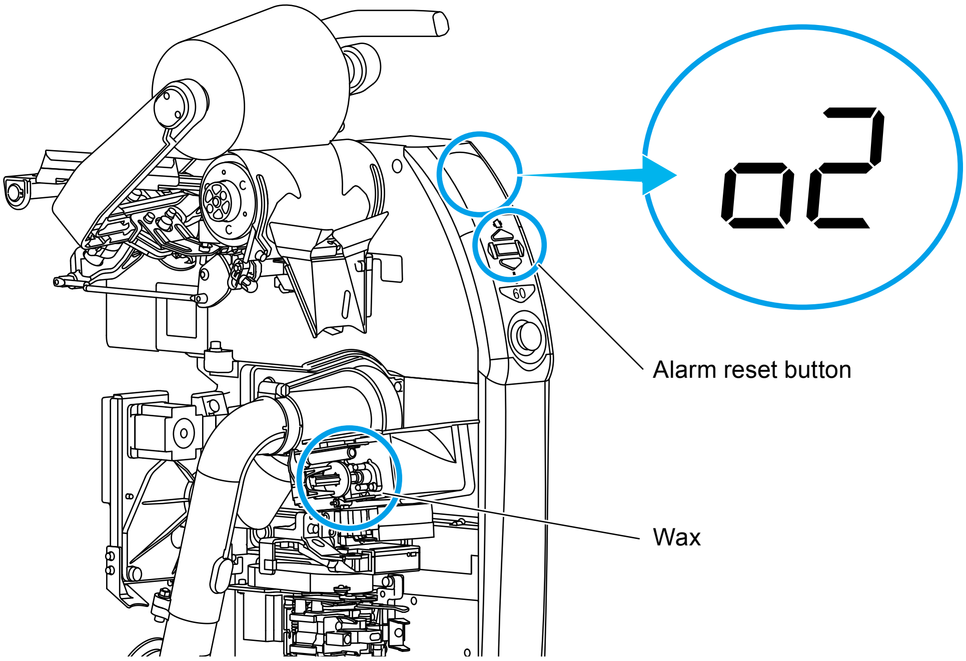
Tensor box [Once a day]	**Peg (Magazine type only) [Once a day]**	**Bobbin conveyor brush (Magazine type only) [Once a day]**
		
Splicer [Once a day] Water splicer [Once per shift] Hot splicer [Once a day]	**Perla-A [Once a day]**	**Bearing center (R side/L side) [As necessary]**
		

Sec 11 Wax Replacement

11-1 Wax Replacement Notification

If the low wax detection is set to ON in the VOS settings, “o2” will be displayed on the winding unit indicator and the alarm LED (middle) will flash when it is necessary to replace the wax.

* The alarm stops once the set time for the low wax alarm is exceeded.

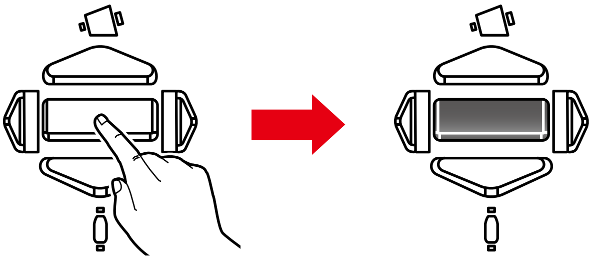


11-2 Replacement Method

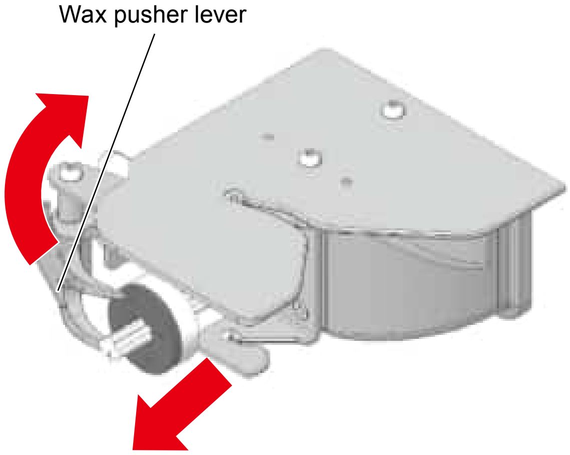
1. **Press the alarm reset button (middle) to stop the winding unit.**

   * This operation is unnecessary when the winding unit has already stopped due to an alarm stoppage.

CAUTION Always stop the alarm first before replacing the wax.

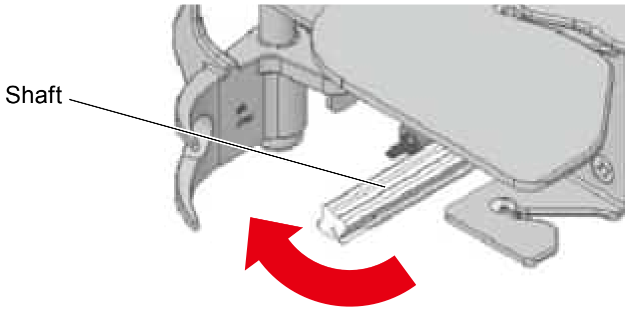


2. **Hold the wax pusher lever open and then remove the wax from the wax shaft as shown by the direction of the arrow.**



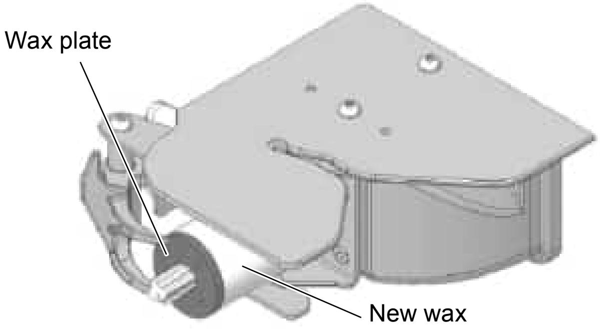
* When re-inserting the shaft, push it in all the way so that the hook catches on the shaft. Then, rotate the wax shaft as shown by the direction of the arrow and fix it in place.

CAUTION Pull on the shaft to ensure that it is caught on the hook.



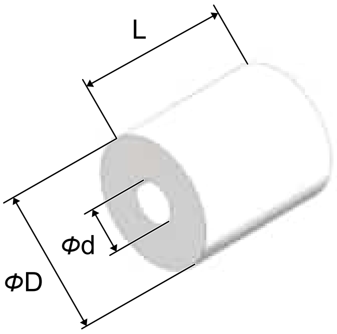
3. **First, insert the new wax and then insert the wax plate onto the shaft. Stick the needle for the wax plate all the way into the wax.**

CAUTION Be careful not to injure yourself while handling the wax plate needle.

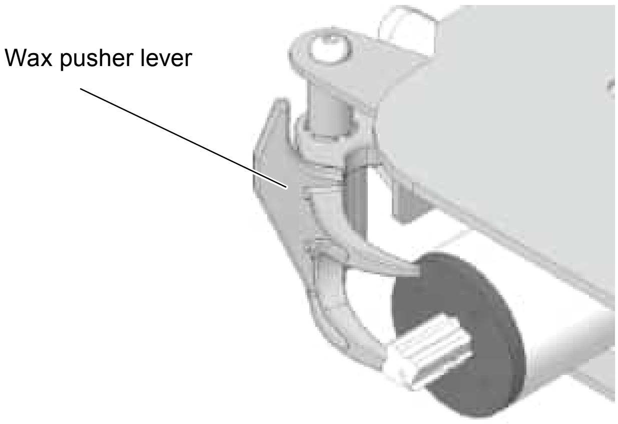


[Usable wax]

Shaft diameter (mm)	d (mm)	D (mm)	L (mm)
Φ12.5	Φ12.7 (Φ12.7 to Φ13.0)	Φ38 (Φ37 to Φ39)	Max. 45
Φ15.1	Φ15.3 (Φ15.3 to Φ15.6)		



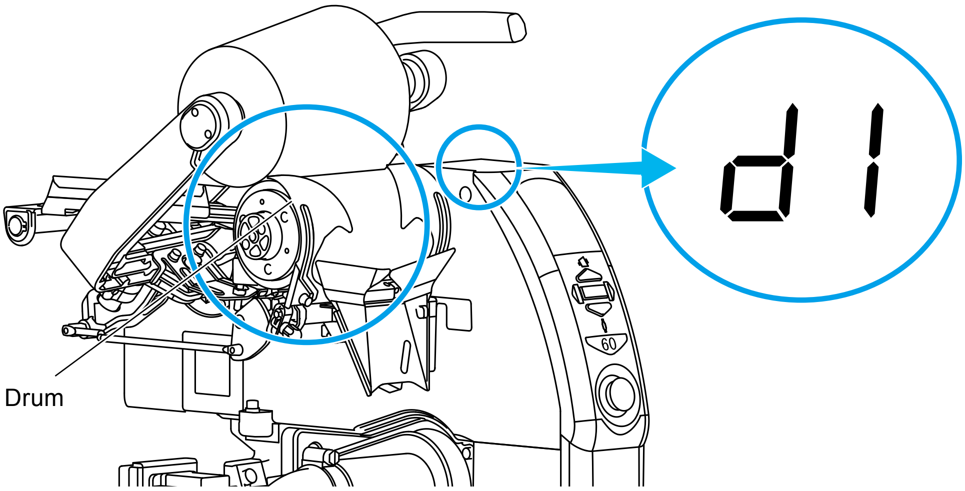
4. **Close the wax pusher lever, and ensure that it is on the left hand side of the wax plate.**
5. **Press the alarm reset button (middle) to start the winding unit.**



Sec 12 Other Operations by the Operator

12-1 Wound Yarn on Drum

If yarn is wound on the drum, “d1” will be displayed on the unit indicator and the winding unit will stop winding; follow the procedure below to take corrective action.



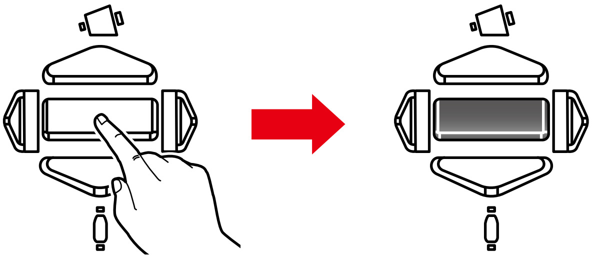
1. **Cut the yarn with scissors specifically designed for drums and then remove the unnecessary yarn.**

CAUTION Cut the yarn in the hole which is specifically designed for yarn cutting. Never use any other tool such as a sickle or a knife.

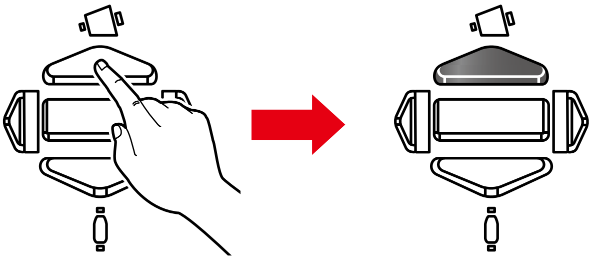
2. **If there are any knots or entangled yarn on the package surface, remove the surface layer.**
3. **Press the alarm reset button (middle) to start the winding unit.**
   The winding unit will automatically begin operation.

12-2 If a Defective Package Occurs

1. **Press the alarm reset button (middle) to stop the winding unit.**
2. **Remove the defective package.**



3. **Press and hold down the alarm reset button (top) for more than 0.2 seconds.**
   The re-tie pipe will pick up the lower yarn.



4. **Press the alarm reset button (middle) to start the winding unit.**

With AD	AD starts traveling and threading. You can also perform manual threading.
Without AD	You need to perform manual threading.

Adjustment Standards & Maintenance (General)

3
Chapter

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2 **Notes Relating to Maintenance** 1
3 **Electrical Parts Replacement** 2
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  3-2 Replacing Electrical Components in the Winding Unit
  3-3 Fuse Replacement
  3-4 How to Use the Extracting Tool
4 **Leaning a Winding Unit Forward** 6
5 **Detaching & Reattaching a Winding Unit** 8
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Sec 1 Performing Maintenance

- The main mechanical parts, such as the cams and levers, are marked to show their correct orientation. Refer to the marks and mount them in their correct positions (so that the marks are facing toward you).
- The electrical components, such as the solenoid valves, solenoids, and sensors, are labeled with connector numbers.
  Ensure that the numbers always match the connectors when mounting and connecting them to the printed circuit boards.
- When attaching/detaching an air pipe, be sure to always stop the air flow beforehand. Be careful not to pull the pipe too forcefully.
- Where applicable, the gears have matchmarks for the parts that engage with each other.
- All the nuts and bolts used in this machine comply with the ISO screw requirements.
- If Muratec parts are not used, the specified machine performance and functionality may be compromised. To ensure stable operation, we recommend using Muratec parts, which can be purchased from Murata Parts Sales.

Sec 2 Notes Relating to Maintenance

- When assembling the cams and cam levers or coupling rods, verify the engraved numbers and the matchmarks.
- Do not use a loose DR (E ring). Replace if necessary.
- No lubrication is necessary for the dry metal bush (DU Bush) on the rotary shaft.
- Refer to Chapter 3, 7-1 for details on the lubrication areas.
- Refer to the parts catalog (separate) for the part names and numbers.
- Send any PCBs that require repairing to Murata Part Sales Ltd., and include a situation report with as many details as possible.

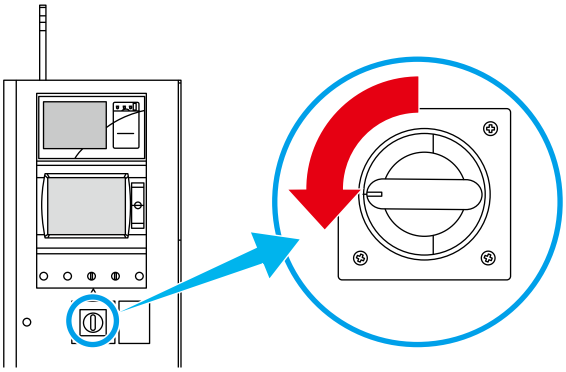
Sec 3 Electrical Parts Replacement

3-1 Replacing the Electrical Parts in the Main Control Box

Switch off the power to the main control box before replacing electrical parts.
Before doing so, please follow the steps given below to open the door.

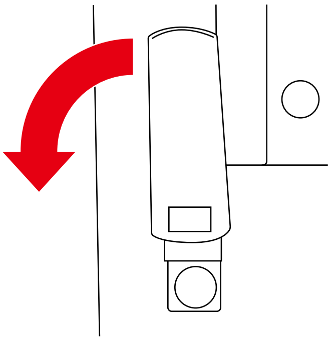
1. **Switch OFF the main switch on the main control box.**

   * Turn the switch 90 degrees to the left to turn it OFF.

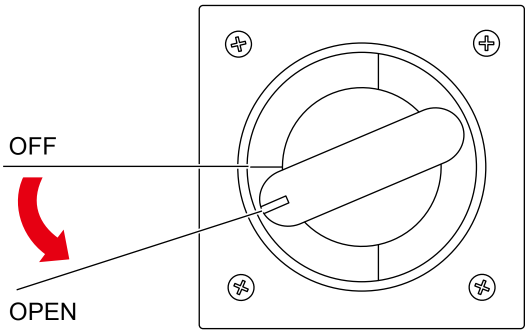


2. **Release the lock handle.**

   * Use the special tool to turn it 90 degrees to the left.



3. **From the OFF position, turn the main switch further in the direction shown by the arrow in the following photo (anti-clockwise), to turn it to the OPEN position, and then open the door.**



CAUTION

- Even if the main switch is hard to move, please ensure that you turn it to the OPEN position before opening the door.
- When turning the switch to the OPEN position, there is a chance that the switch will be hard to move or the door will be hard to open. In such cases, push the door, and at the same time turn the main switch to the OPEN position.
- Attempting to force open the door when the switch is not at the OPEN position may damage the main switch.

3-2 Replacing Electrical Components in the Winding Unit

Turn OFF the power to the winding unit before replacing any electrical components.
There are three methods for turning OFF the power. Use any of the methods shown below to turn OFF the power and replace the electrical components.

* Refer to Chapter 6 for details on the board replacement location.

DANGER

The winding unit is powered by a DC280 V electrical current which is extremely dangerous.

Turning OFF the Power Supply to One Machine

1. **Press the stop button and turn the main switch OFF.**
2. **Replace the printed circuit board.**
3. **Turn the main switch ON and press the start button.**
   The machine is enabled for operation.

Turning OFF the Power Supply to One Span

1. **Press the alarm reset button (middle) to temporarily stop the winding units located on the span which is to be turned OFF.**
2. **Open the cover located on the back of the main control box and switch OFF the breaker for that particular span.**
3. **Replace the printed circuit board.**
4. **Switch ON the breaker for the span and close the cover.**
5. **Press the alarm reset button (middle) to start up the winding units on the span.**
   The machine is enabled for operation.

Turning OFF the Power Supply to One Winding Unit

1. **Press the alarm reset button (middle) to temporarily stop each winding unit on the span (that contains the specific winding unit to be turned OFF).**
2. **Open the cover located on the back of the main control box and switch OFF the breaker for that particular span.**
3. **Remove the cable duct cover located at the back of the machine. Then, remove the PN connector for the winding unit where the printed circuit board will be replaced.**
4. **Switch ON the breaker for the span that was switched OFF in step 2.**
5. **Press the alarm reset button (middle) to start up the other winding units on the span.**
   All the winding units, except for the winding unit where the printed circuit board will be replaced, will be enabled for operation.
6. **Replace the printed circuit board.**
7. **Press the alarm reset button (middle) to temporarily stop the winding units that were restarted in step 5.**
8. **Switch OFF the breaker again for the span that was switched OFF in step 2.**
9. **Connect the PN connector for the winding unit where the printed circuit board was replaced.**
10. **Switch ON the breaker for the span that was switched OFF in step 8.**
11. **Press the alarm reset button (middle) to start up all the winding units on the span.**
    The span is enabled for operation.

3-3 Fuse Replacement

Turn OFF the main switch, and troubleshoot and remove the cause of the blown fuse. Then, replace the fuse.

CAUTION

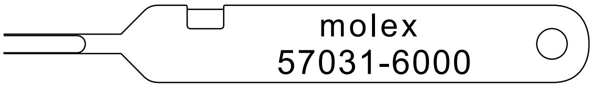
When a machine fuse has blown, always replace the fuse with a Muratec part.
Not using a Muratec fuse can jeopardize the protection of the circuit when an error occurs and can lead to an accident such as a blown fuse.
Refer to the electrical drawing for the Muratec fuse specifications.

3-4 How to Use the Extracting Tool

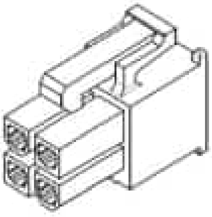
This extracting tool is used to extract or remove electrical wiring attached to the housing.

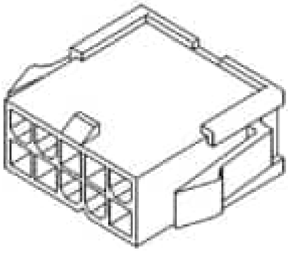
Model: 57031-6000

- **External view**



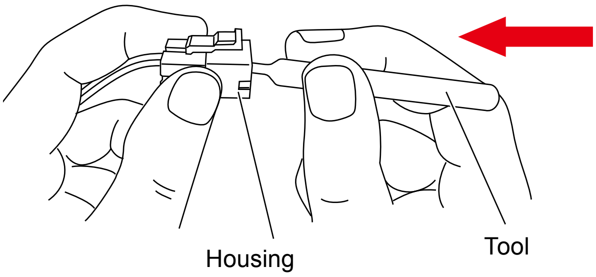
- **Applicable housing**


5557

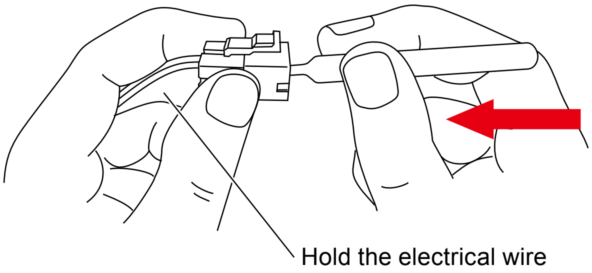

5559

- **Procedure**

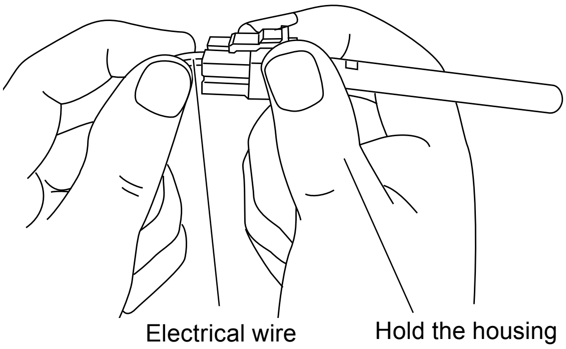
1. **Slowly insert the extracting tool from the opposite side of the electrical wire until it is just inside the housing.**



2. **Firmly hold the part close to the electrical wire housing, and then carefully push in the extracting tool until you reach the back of the housing.**

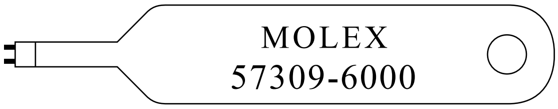


3. **Hold the housing while the extracting tool is inserted, and remove the electrical wire.**

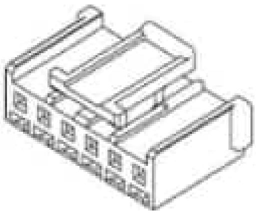


Model: 57309-6000

- **External view**

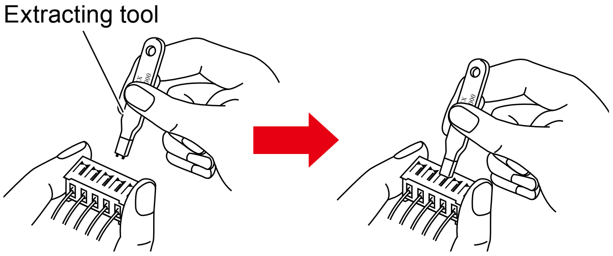

MOLEX
57309-6000

- **Applicable housing**

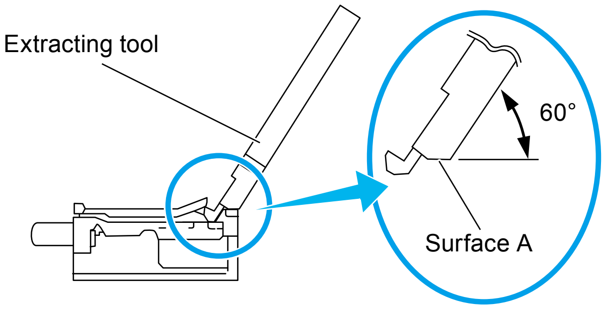


- **Procedure**

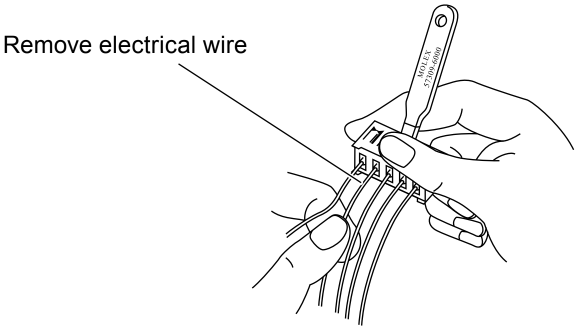
1. **Ensure that you hold the extracting tool so that the side labeled “Molex” faces forward. Use the key-shape part of the tool to hook into the housing.**


Extracting tool

2. **Insert the extracting tool at a 60° angle relative to the top surface of the housing, and remove the housing lance from the terminal.**
   If surface A is flush with the top surface of the housing, the tool will be at a 60° angle.


Extracting tool
60°
Surface A

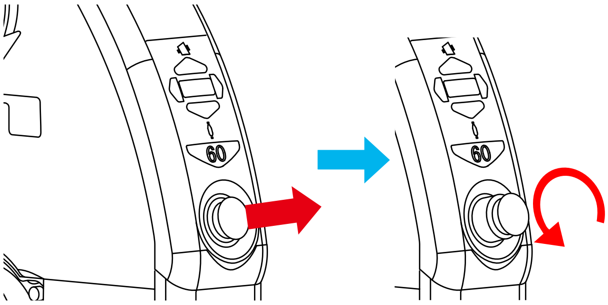
3. **Hold the extracting tool and the housing with one hand and remove the electrical wiring with the other hand to remove the terminal from the housing.**


Remove electrical wire

Sec 4 Leaning a Winding Unit Forward

Leaning a winding unit forward becomes necessary for performing repairs, replacing parts and printed circuit boards and/or troubleshooting any faults occurring inside the winding unit.
The procedure is the same for the Tray type and the Magazine type.

1. **Stop the blow cleaner.**
2. **Stop the winding unit by pulling the unit operation switch and rotating it to the left, and engaging the lock.**

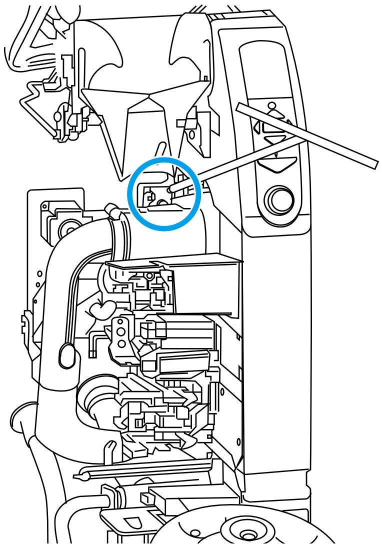


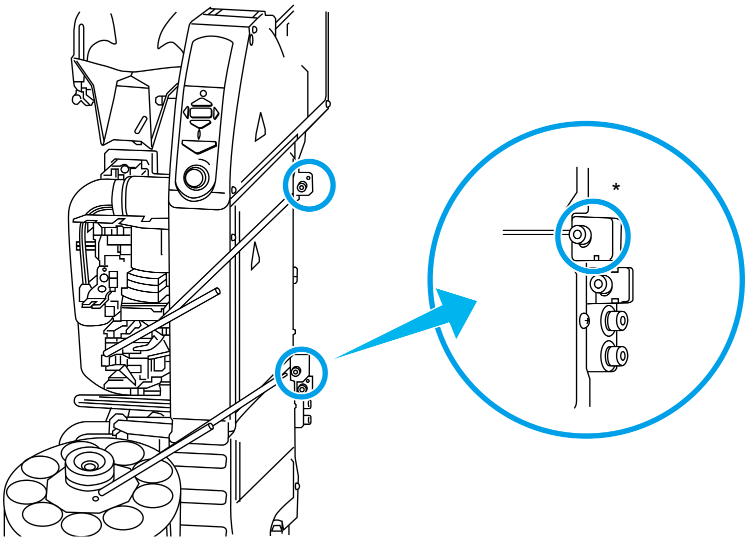
3. **Remove the 3 bolts using the winding unit wrench.**

* There are two bolts: one is for leaning the winding unit and one is for lowering it. The removal bolt is different.

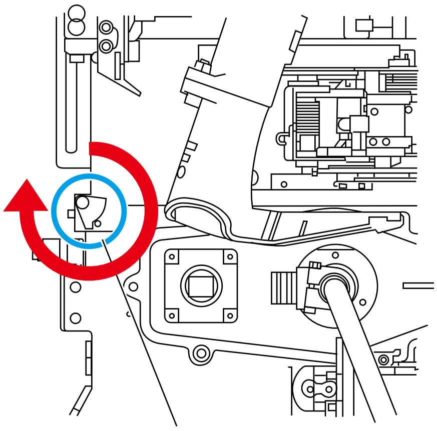
CAUTION

It is extremely dangerous if you make a mistake by removing the wrong bolt, as the winding unit could come off the main frame. So, extreme care must be taken to identify the bolts correctly.

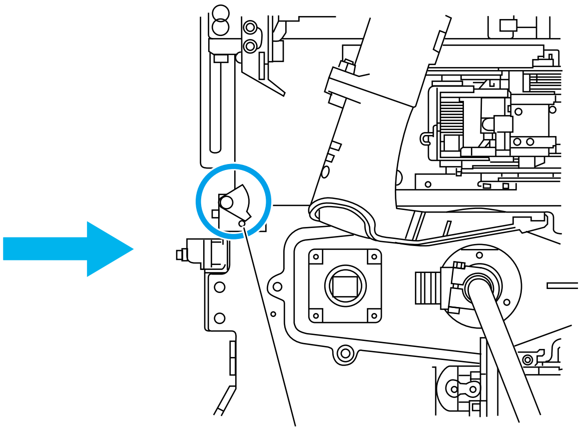




4. **Rotate the latch and release the lock.**



Locked

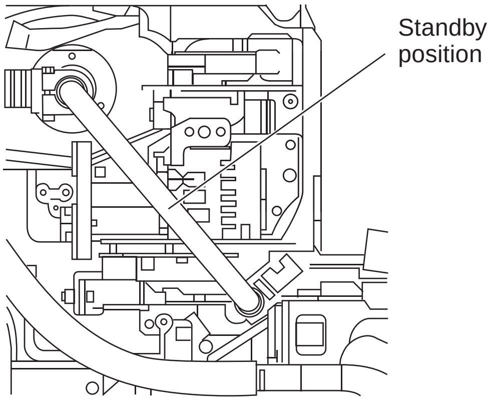


Released

5. **Ensure that the re-tie pipe is in the standby position.**

CAUTION

You can damage the machine if you lean the winding unit forward when the re-tie pipe is not in the standby position.

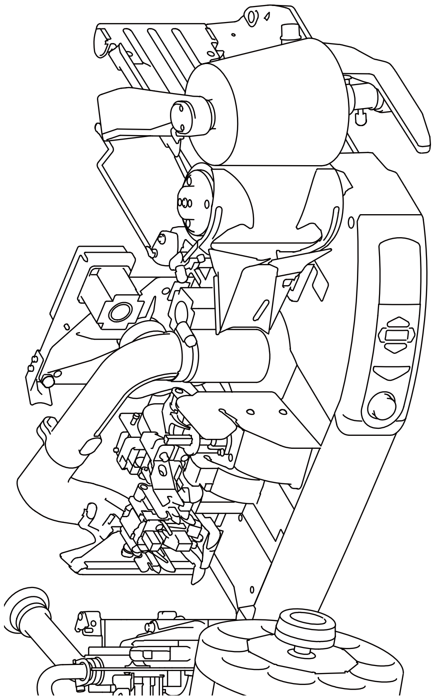


6. **Put your hands on the protruding part at the back of the drum motor, and lean the winding unit forward.**

* Wait for the drum motor to cool down before putting your hands on it.

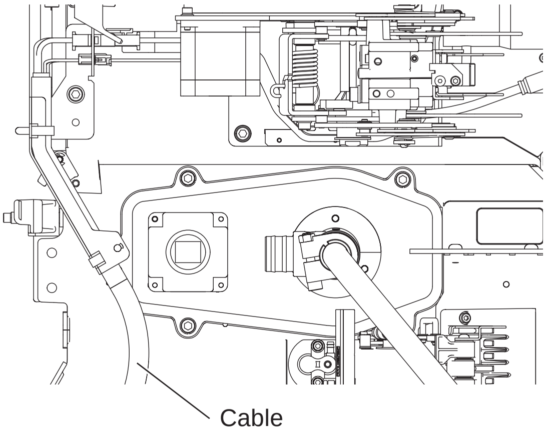
CAUTION

Do not touch the drum cover when leaning the winding unit forward.



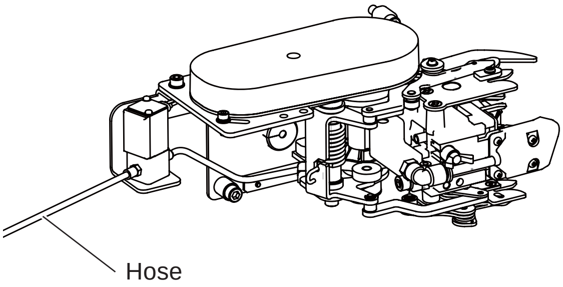
CAUTION

[Hot splicer specification]
When leaning the winding unit forward or returning it back to its original position, make sure that the cable does not get caught on the unit casing.



CAUTION

[Water splicer specification]
When leaning the winding unit forward or returning it back to its original position, make sure that the hose does not get caught on the unit casing.

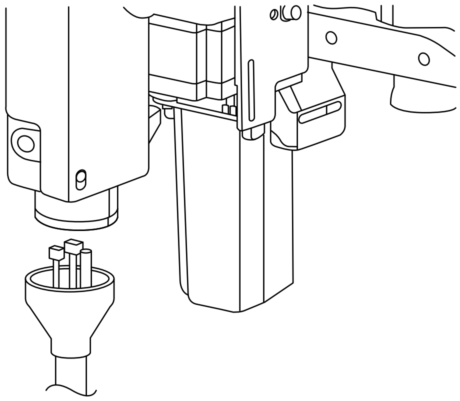


Sec 5 Detaching & Reattaching a Winding Unit

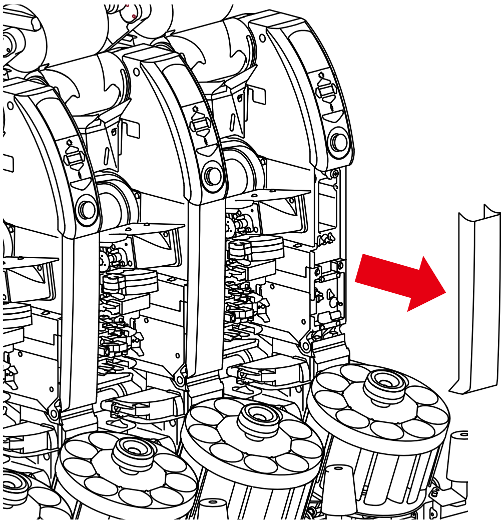
The procedure is the same as for the Tray type and the Magazine type.

5-1 Preliminary Steps Before Detachment & Reattachment

1. **Turn OFF the main switch for the machine.**
2. **Stop the air supply to the machine.**
3. **Let out the remaining pressure in the pipe at the joints with the check valves that are located on each pipe end.**
4. **Move back the rubber cover on the connection area and remove the electrical wiring for the peg (air pipe and electrical wiring for the carrier guide).**



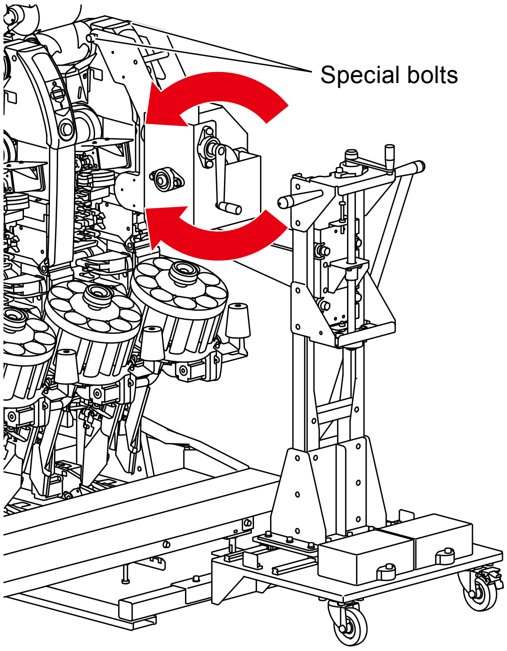
5. **Remove the front cover for the winding unit.**



6. **Reattach the winding unit carrier to the winding unit.**

CAUTION

> The clearer cable may get caught on the guide pad for the winding unit carrier.
> Ensure that the cable is secured inside the groove.

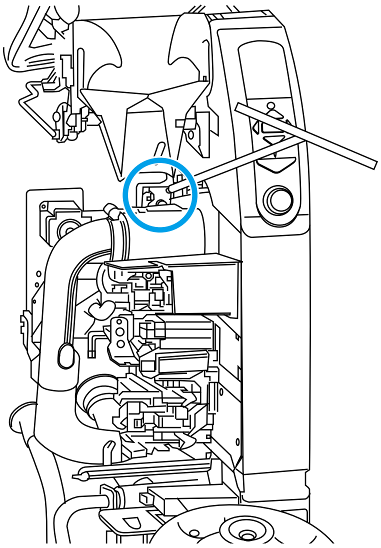


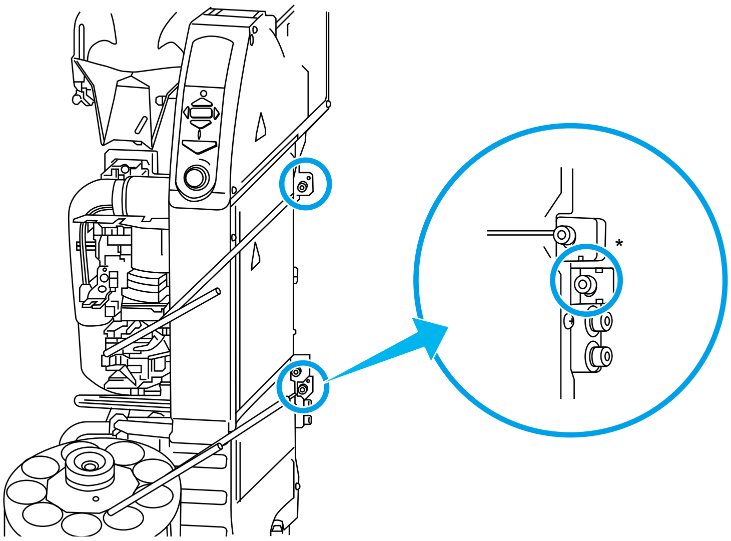
7. **Insert the special bolts into both holes on the winding unit casing.**
8. **Adjust the handle so that the stopper touches the middle of the winding unit.**

5-2 Detaching a Winding Unit

1. **At the back of the winding unit, remove the pipe and cable that are connected to the winding unit (Bal-Con, peg and ejector).**
2. **Remove the 3 bolts using the winding unit wrench.**

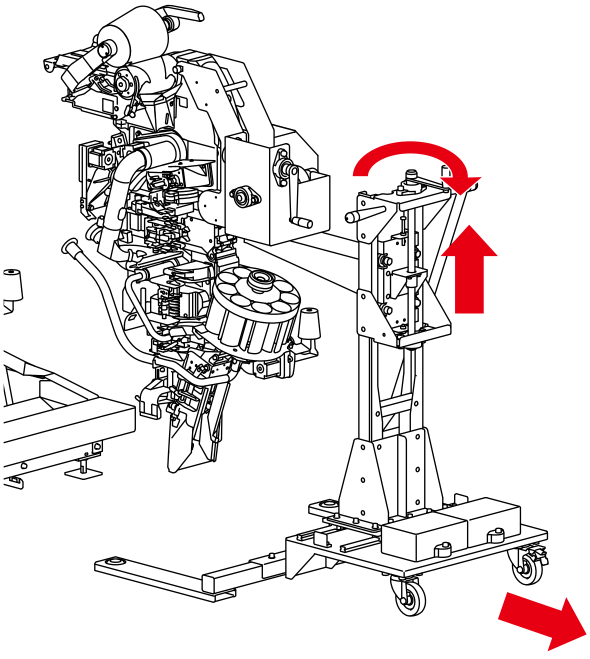
* There are two bolts: one for leaning the winding unit and one for lowering it. The removal bolt is different.





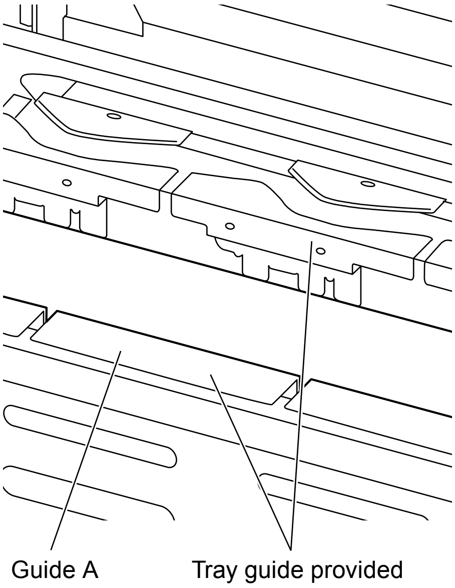
3. **Unfasten the winding unit cover.**

4. **Turn the handle for the winding unit carrier, and then lift up the winding unit and pull it towards you.**



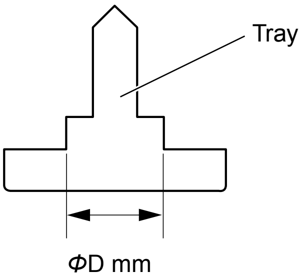
Detachment Method for Bobbin Tray/Link Coner Type

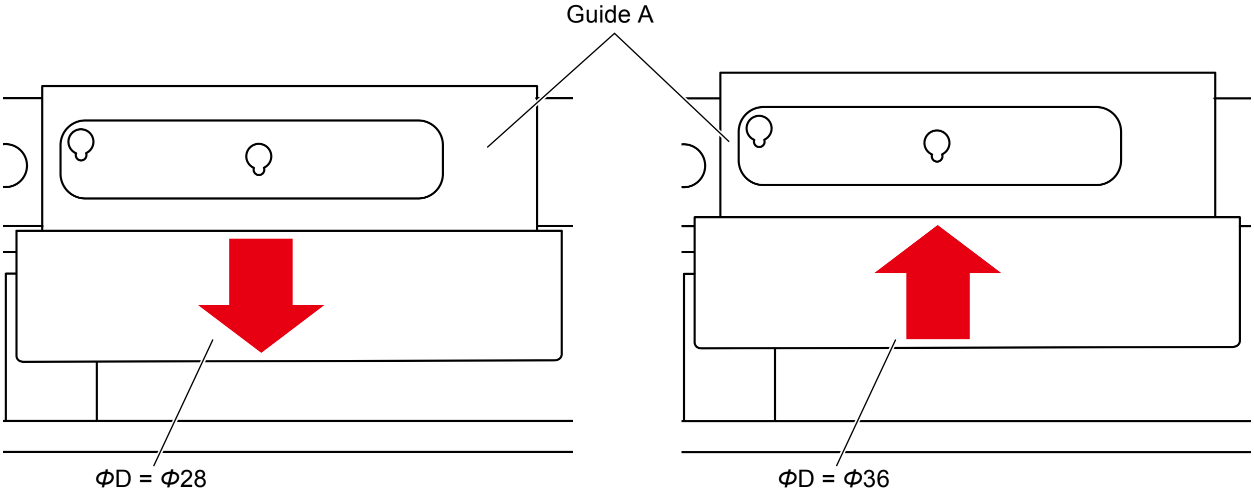
1. **Attach the tray guide (provided) to the conveyor frame in a way that will prevent the tray from falling off the conveyor.**



2. **Change the guide A attachment position according to the neck diameter of the tray.**

ΦD (mm)
Φ28
Φ36





5-3 Reattaching a Winding Unit

1. **Perform preliminary steps 1 through 3 in Section 5-1 before reattaching the winding unit.**
2. **After performing the procedure in Section 5-2 in reverse order, reattach the winding unit following steps 4 through 8 in Section 5-1 in reverse order (i.e. 8, 7, 6, 5, 4).**
3. **Verify that there is no air leaking from the rubber joint on the suction pipes for the suction mouth and the re-tie piping.**

Sec 6 Check Mode

6-1 Check Mode

The “Check Mode” can be found on the VOS maintenance screen and is used for each winding unit check mode.

VOS Screen

Maintenance → Maintenance → UNIT → Check Mode

* Each function selection can be setup for each group.

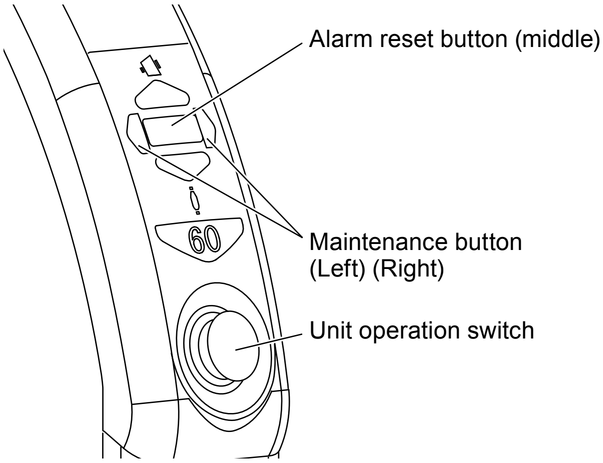
Setting Items

- Check mode ON/OFF for all winding units
- Yarn defect sampling mode
- PC Bal-Con adjustment (Only possible while stopped)
- Splicer check
  - Untwisting check
  - Visual check
  - Water level check (Only possible while stopped)
  - Output check (Only possible while stopped)
  - Input check (Only possible while stopped)

Setting Method

- **When turning the function ON/OFF for each group**

1. **Pull the unit operation switch to turn OFF the machine when using the check mode that can only be turned ON if the machine is stopped.**
2. **Select “Check Mode” from the VOS “Check Mode” screen.**
3. **Select ON or OFF for the setting: “Check Mode ON/OFF for All Winding Units” (on the VOS “Check Mode” screen), to enable or disable the check mode for all winding units.**



- **When turning the function ON/OFF for each winding unit**

1. **Pull the unit operation switch to turn OFF the machine when using the check mode that can only be turned ON if the machine is stopped.**
2. **Select “Check Mode” from the VOS “Check Mode” screen.**
3. **Press the maintenance buttons (right and left) at the same time.**
   The code No. for each check mode appears on the status display.
4. **Press the alarm reset button (middle).**
   Turn ON each check mode function.
5. **When turning OFF the check mode function, press both maintenance buttons (right and left) at the same time.**

6-2 Yarn Defect Sampling Mode

This function commands the clearer to take cutting samples and check that the yarn is being cut according to the conditions that were set.
When the clearer cuts the yarn, the machine stops before performing the splicing operation. The machine can only stop for certain cutting types. You can select from the multiple sample settings that are available.

1. **After the yarn is cut, the alarm LED (middle) turns on and the winding unit stops.**
2. **Ensure that the clearer is performing the yarn defect sampling operation, and then press the alarm reset button (middle).**
   Operation restarts.

6-3 Drive Operation Check

Splicer Operation Check

1. **Press the alarm reset button (middle).**
   The LED5 (middle) flashes and the splicer stops in the Ln lever position.
2. **Press the alarm reset button (middle) again.**
   The LED5 (middle) turns on and the splicer stops at the home position.

Suction Mouth Operation Check

1. **Press the alarm reset button (middle).**
   The alarm LED (middle) flashes and the suction mouth stops at the “upper yarn end find” position.
2. **Press the alarm reset button (middle) again.**
   The alarm LED (middle) turns on and the suction mouth stops at the home position.

Magazine Can Operation Check

- **When operating only the magazine and the shutter**

1. **Press the alarm reset button (middle).**
   The alarm LED (middle) flashes, and only the magazine and the shutter perform the chute operation and stop at the chute position.
2. **Press the alarm reset button (middle) again.**
   The alarm LED (middle) turns on and the magazine and the shutter stop at the home position.

- **When also operating the peg at the same time**

1. **Press the alarm reset button (top).**
   The alarm LED (top) flashes, and only the magazine and the shutter perform the chute operation and stop at the chute position.
2. **Press the alarm reset button (top) again.**
   The alarm LED (top) turns off and the magazine, the shutter and the peg stop at the home position.

PC Bal-Con Operation Check

This function is used for adjusting the Bal-Con stop position and centering the Bal-Con and bobbin.

1. **Press the alarm reset button (middle).**
   The Bal-Con lowers and stops at the winding position.
2. **Press the alarm reset button (middle) again.**
   The Bal-Con rises to the top end position.

6-4 Splicer Check

Untwisting Check

1. **After the splicing operation, the winding unit stops before performing the twisting operation.**
2. **Check the condition of the yarn before being twisted, and then press the alarm reset button (middle).**

Visual Check

1. **After the splicing operation, the winding unit stops.**
2. **Perform a visual check on the part where the yarn is spliced, and then press the alarm reset button (middle).**
   The winding operation starts.
3. **To cut the yarn, press the alarm reset button (middle).**

Water Level Check (Water splicer only)

1. **Press the alarm reset button (middle).**
   The water splicer is filled with water several times.

   * If the alarm reset button (middle) is pressed again while the water splicer is being filled, the water filling operation is cancelled.

6-5 Output Check

1. **Press the alarm reset button (middle).**
   Turn ON the set output.

6-6 Input Check

When the set input is turned ON, the maintenance LED (green) turns ON.

6-7 DATA

The data for each setting appears on the status display.

* The alarm code is displayed when an alarm occurs.

Package Diameter (D0 to D2)

The status for the package diameter is displayed as D0, D1 or D2.

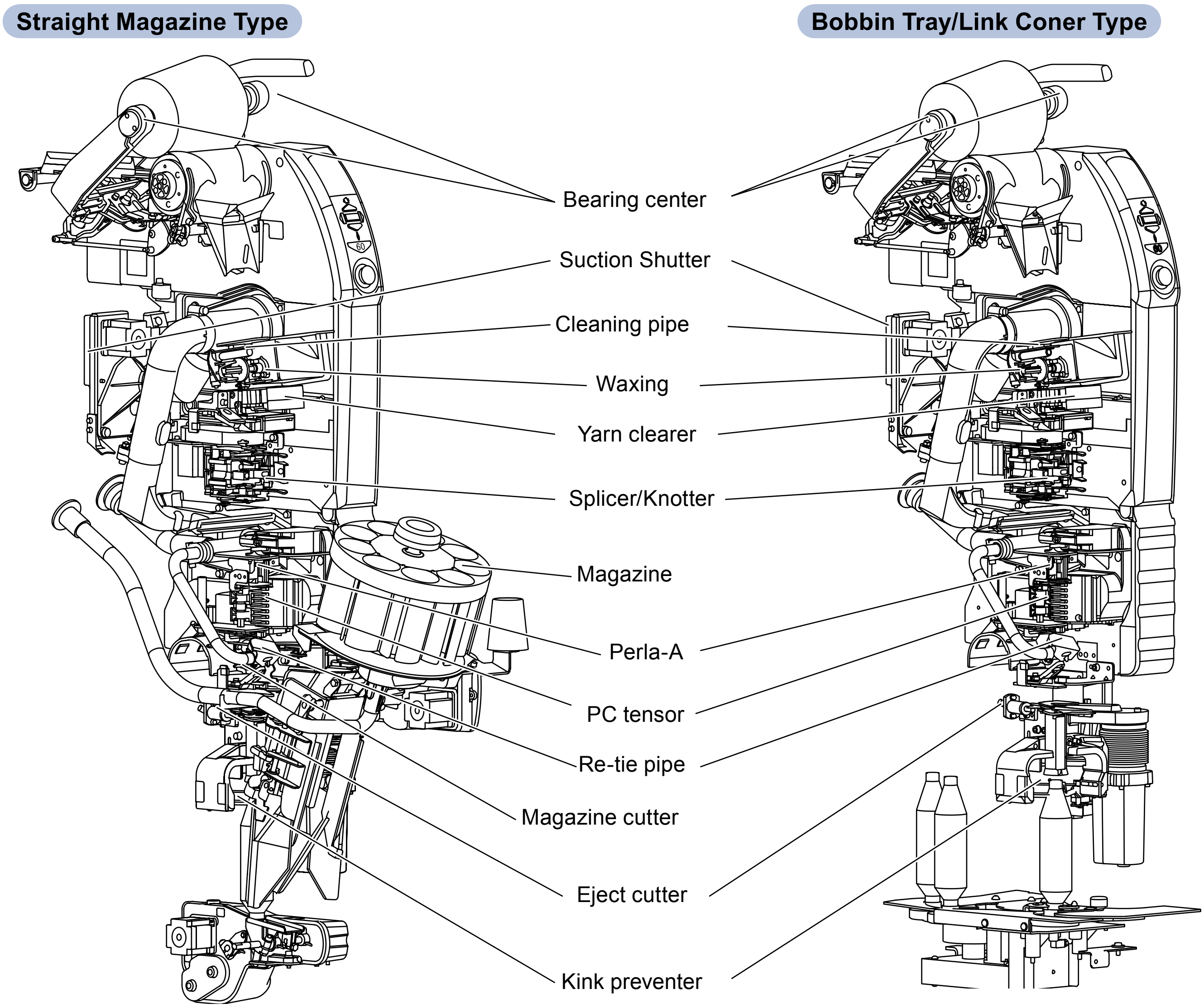
Measuring the Remaining Yarn

The remaining yarn left on the preceding bobbin is displayed.

Remaining Yarn = The amount of yarn wound from the bobbin after the Bal-Con reaches the bottom end position (out of the total amount of winding yarn for one bobbin)

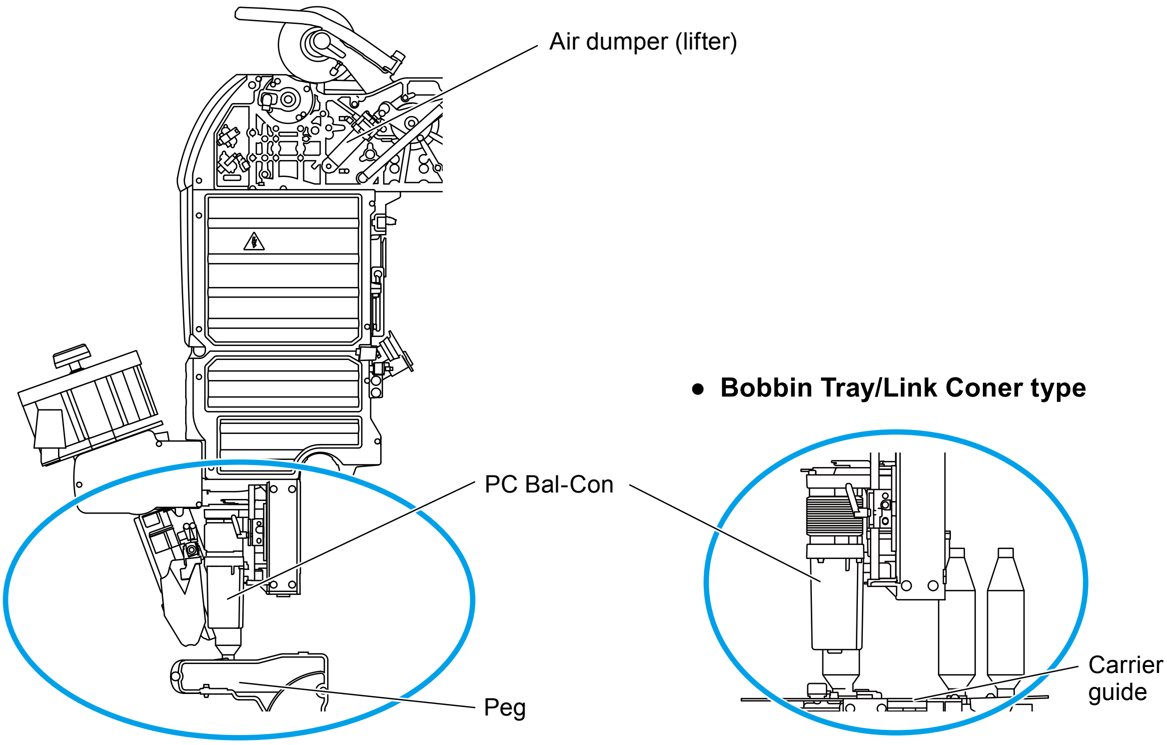
* After loading the full bobbin, perform a visual check to ensure that the bobbin is being wound completely.

Sec 7 Inspection


Straight Magazine Type

Bobbin Tray/Link Coner Type

Bearing center
Suction Shutter
Cleaning pipe
Waxing
Yarn clearer
Splicer/Knotter
Magazine
Perla-A
PC tensor
Re-tie pipe
Magazine cutter
Eject cutter
Kink preventer


- **Bobbin Tray/Link Coner type**

Air dumper (lifter)
PC Bal-Con
Peg
Carrier
guide

7-1 Periodic Inspection

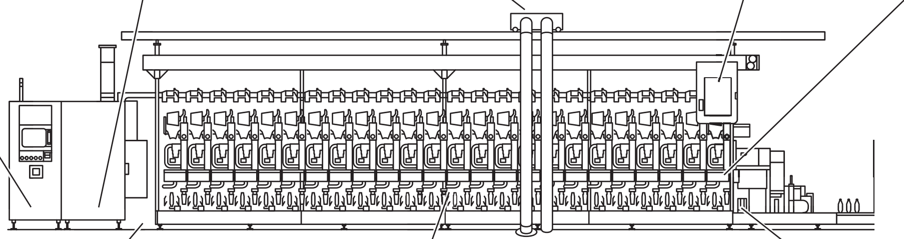
Inspection & Lubrication (Frequency)

Frequency	Section	Guideline	Maintenance time	
			Min. per winding unit	Min. per 60 winding units
Daily	Water splicer *Refer to Chapter 4Hb and 4Hc	- Clean V-shape area of splicer nozzle and untwisting block with commercial brush (with nylon bristles), etc. - Check for wear or damage on untwisting block beater	---	---
		- Clean V-shape area of splicer nozzle, upper and lower guides and inner surface of untwisting pipe with commercial brush (with nylon bristles), etc. - Clean untwisting pipe with standard tool brush		
	Hot splicer	Check if the nozzle temperature rises within one minute after the machine starts.		
Weekly	Waxing	Clean only the winding unit(s) with wax or yarn waste buildup around wax holder	1	60
	Cleaning pipe	Clean only the winding unit(s) with clogged pipes		
	PC tensor	Clean only the winding unit(s) with yarn waste entangled on gate		
	Re-tie pipe	- Perform visual check - If necessary, remove waste by hand or by blowing air	---	15
	Perla-A	Drain and element inspection/replacement - Is it automatically draining? - Have two years passed since you began using it? (Or, as a guideline, when measuring pressure with a check valve during operation, does it reach 0.01 MPa?)		2 (30)
	Water splicer *Refer to Chapter 4Hb and 4Hc	- Check for faults with water supply solenoid valve(s) - Check whether water is continuing to discharge or is not discharging at all (visual check, as well as splicing performance check)		---
		- Check cutter sharpness (visual check) - Check for air discharge faults (visual and sound check, as well as splicing performance) - Check whether or not air continues to blow or does not blow at all. - Check for faults with water supply solenoid valve(s)		
	Air splicer *Refer to Chapter 4Ha			
	Hot splicer *Refer to Chapter 4Hd			
Monthly	PC Bal-Con	Clean cotton fly around Bal-Con sensor	1	60
	Water splicer *Refer to Chapter 4Hb and 4Hc	Remove splicer and clean	---	---
Every 2 months	Suction shutter	Check and clean cotton fly buildup around shutter operation area	2	120
Every 3 months	Water splicer *Refer to Chapter 4Hc	After removing cotton fly from clamp cutter, lubricate axis (blade lubrication not required) * ISO VG10 (Bearing oil)	---	---
	Air splicer *Refer to Chapter 4Ha			
	Hot splicer *Refer to Chapter 4Hd			
	Bearing center (R side) *Refer to Chapter 4Ba	Lubricate packing and bush on slide section * Silicone oil	---	60

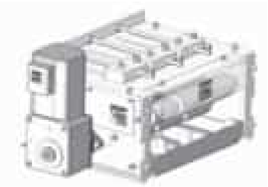
Frequency	Section	Guideline	Maintenance time	
			Min. per winding unit	Min. per 60 winding units
Every 6 months	Re-tie pipe *Refer to Chapter 4Ga	Remove any cotton fly that is clogged in the shaft and boss (Only for the corresponding winding units)	15	---
	PC Bal-Con	Lubricate shaft and slide screw * Extreme-pressure lithium-based grease with mineral oil, NLGI No.2	---	---
	Bearing center (R side) *Refer to Chapter 4Ba	Remove any cotton fly that is jammed inside		60
		Lubricate bearing center * Klüber		180
	Air dumper (lifter) *Refer to Chapter 4Ba	Remove dirty or old grease and apply new grease * Extreme-pressure lithium-based grease with mineral oil, NLGI No.2 * Do not use grease containing molybdenum disulfide.		300
	Air splicer *Refer to Chapter 4Ha	Remove splicer and clean		---
	Hot splicer *Refer to Chapter 4Hd			
	Kink preventer	- Remove solenoid (for linear motion) plunger and clean * Do not lubricate plunger. - Clean and lubricate spring hook and stopper * Extreme-pressure lithium-based grease with mineral oil and molybdenum disulfide (wet type)	5	300
Yearly	Magazine	Clean and lubricate latch inside base and feed lever (slide section) * Extreme-pressure lithium-based grease with mineral oil and molybdenum disulfide (wet type)	5	300
	Magazine cutter	Clean and lubricate packing parts inside cylinder * Use maintenance tools * Extreme-pressure lithium-based grease with mineral oil, NLGI No.2	5	300
	Eject cutter	Clean and lubricate packing parts inside cylinder * Use maintenance tools * Extreme-pressure lithium-based grease with mineral oil, NLGI No.2	5	300
	Peg	Remove cover, clean inside, and lubricate rod and spring *When performing maintenance, remove only the peg unit. * Extreme-pressure lithium-based grease with mineral oil and molybdenum disulfide (wet type)	5	300
	Ejector	Remove cover, clean inside, and lubricate rod and spring * Extreme-pressure lithium-based grease with mineral oil and molybdenum disulfide (wet type)	5	300
	Control box, Unit duct	- Check all components and electrical wiring for discoloration and corrosion - Check that all bolts, screws, and connectors are fastened securely - Check all control components (for example, contact surfaces of all relays and burnt out display bulbs) - Measure insulation resistance - Check all voltages - Check all parts for abnormal heat generation - Clean - Check that all bolts and connectors at terminals are tightened securely - Check all wiring for overheating, discoloration, or deformation	---	150
	Air splicer *Refer to Chapter 4Ha	Clean inside untwisting pipe with standard tool brush		
	Hot splicer *Refer to Chapter 4Hd			

Frequency	Section	Guideline	Maintenance time Min. per machine
For lot changes	Water splicer *Refer to Chapter 4Hb and 4Hc	Check appearance of splice and its strength (pull gauge)	---
	Air splicer *Refer to Chapter 4Ha		
	Hot splicer *Refer to Chapter 4Hd		

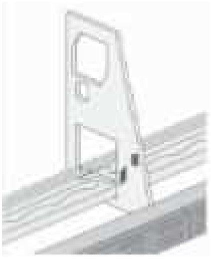
Machine


Main control box
Blower
Blow cleaner
AD
Dust collector nozzle

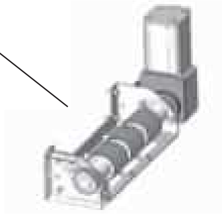
Conveyor (drive end side)



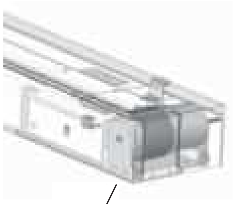
Area on the frame joints where the belt passes through

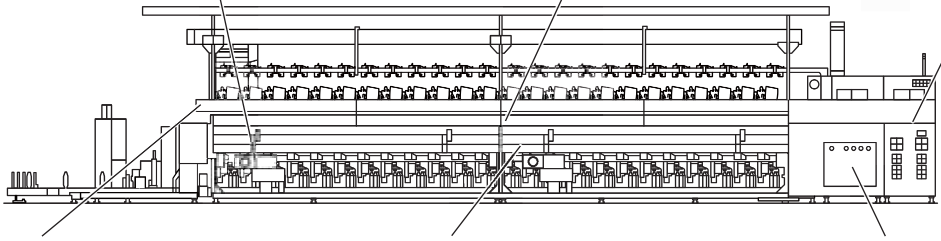


Conveyor (out-end side)



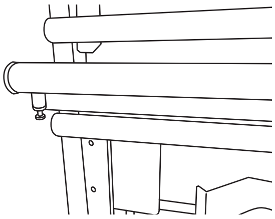
Package conveyor (drive end side)




Dust collector
Unit duct

Package conveyor (out-end side)

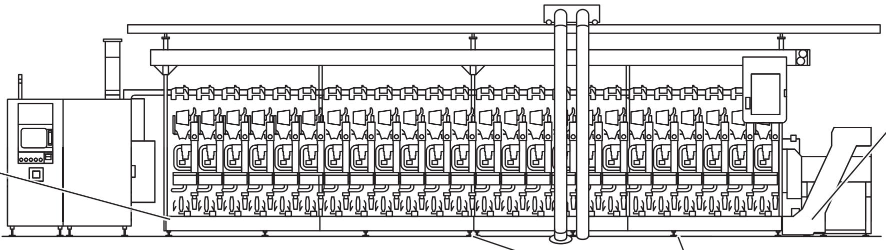
Drain release for air piping (branch line)



Air regulator box

Magazine conveyor (tension side)

Ascending section of conveyor



Jack bolt

Inspection & Lubrication (Frequency)

Frequency	Section	Guideline	Maintenance time Min. per machine
Daily	Dust collector *Refer to Chapter 5Da	Check cotton fly buildup on suction nozzles for all winding units - Perform visual check for cotton fly clogging on each yarn waste duct - Perform visual check for clogged filter - Check for cotton fly buildup on shutter	1
	AD *Refer to Chapter 9	Remove cotton fly around photoelectric tubes, and cotton fly stuck to rail brushes with air gun	15
Weekly	Air *Refer to Chapter 5Aa and 5Ab	Drain and element inspection/replacement - Is regulator drain on back side of blower performing draining operation automatically? - Remove each drain from air pipe joints on rear side of machine	12
	Package conveyor *Refer to Chapter 5Ca	Remove yarn waste from conveyor brushes (2 locations) on drive end and out-end sides behind machine	5
	Tray conveyor *Refer to Chapter 5Fa	- Remove yarn waste from conveyor brushes (2 locations) on drive end and out-end sides behind machine - While conveyor is stopped, remove yarn waste from drive end and out-end tension sections and clean span joints	25
	Magazine conveyor *Refer to Chapter 5Ha	Clean conveyor brushes, jack bolts and drive end and ascending section of conveyor on front of machine	5
Monthly	Blower *Refer to Chapter 5Ba	Remove blower front cover and clean impeller	10
	Dust collector *Refer to Chapter 5Da	- Remove cotton fly on suction nozzles for all winding units behind machine - Perform visual check for clogged filter - Check for cotton fly buildup on shutter	1 × 60 winding units
		Clean filter, shutter, and air cylinder	30
	Blow cleaner *Refer to Chapter 5Ea	Clean filter inside traveling devices	15
	Magazine conveyor *Refer to Chapter 5Ha	Remove yarn waste (around pulley while conveyor is stopped) from ascending section of conveyor	5
	AD *Refer to Chapter 9	- Remove cotton fly around cutter with air gun - Lubricate cutter and clamp plate axes * ISO VG10 (Recommend dry type)	10
	Main control box *Refer to Chapter 6	- Clean the side cover filter - Remove the cover, and clean any clogged filters using an air gun, etc.	10
Every 6 months	AD *Refer to Chapter 9	- Clean chain and cam follower with air gun after removing top and side covers - Use vacuum cleaner to suck out cotton fly around electrical equipment	30
		Lubricate travelling chain while top cover is removed * ISO VG68 (Lubricant)	15
Yearly	Blower *Refer to Chapter 5Ba	Use reference table and check static pressure on static pressure gauge located on out-end of machine	10
	AD *Refer to Chapter 9	Lubricate cylinder in air cylinder shaft while air is shut off * Extreme-pressure lithium-based grease with mineral oil, NLGI No.2 * Do not use grease containing molybdenum disulfide.	15
Every 2 years	Air *Refer to Chapter 5Aa and 5Ab	Replace element on regulator located on back side of blower	15

Precautions During Inspection (Electrical)

- **Always turn the main switch OFF during checks that do not require power.**
  (When performing maintenance, place a sign on the machine saying "Maintenance in progress. Do not turn the main switch on!")
- **Inform other operators before performing any checks that require the machine to be turned on or to be operated.**
- **During the inspection, ensure that you do not damage any functioning parts.**
- **After the inspection, ensure that the following steps have been undertaken before turning the main switch ON: All bolts that were loosened during the inspection have been securely tightened. All tools or measuring instruments that were used during the inspection have been removed. All wiring or cables that were disconnected during the inspection have been re-connected.**

CAUTION

During and after the inspection, be sure to re-tighten the terminal bolts.
Loose terminal bolts can lead to a burn out of the electrical equipment.

- **When cleaning the light receptor and the projector for the photoelectric sensor, wipe them both clean with a dry, soft cloth, a cloth moistened with water, or water diluted with mild detergent. Do not use alcohol based agents (thinner, benzine, etc.).**
- **When removing the cotton fly, use a vacuum cleaner to suck it out.**

CAUTION

Do not use compressed air to blast the cotton fly when cleaning. Using compressed air causes the cotton fly to get inside the electrical equipment leading to an electrical malfunction.

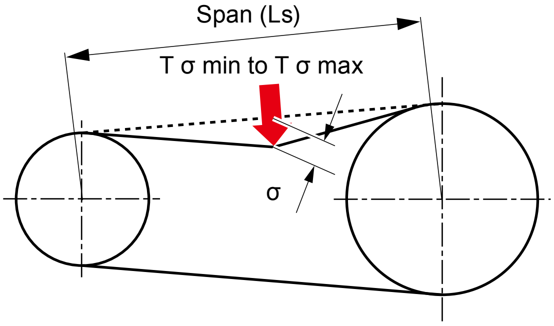
7-2 Tightening the Belts

Tightening the Belts

- **How to check if the belt has been tightened to the specified tension using deflection and load**

Tighten the belt so that when the deflection is (σ), the load falls between T σ min and T σ max.

Mechanism	σ (mm)	Tσ min (N)	Tσ max (N)
Re-tie pipe	1.6	2.5	3.2
Suction mouth	1.6	2.5	3.2
Suction shutter	1.0	2.6	3.2
Yarn guide lever	0.5	2.7	3.3
Magazine	1.1	2.4	3.0
Splicer	1.5	2.6	3.3
Bal-Con	1.6	2.9	3.5
Peg	0.9	2.4	3.0
Ejector	1.4	2.6	3.2

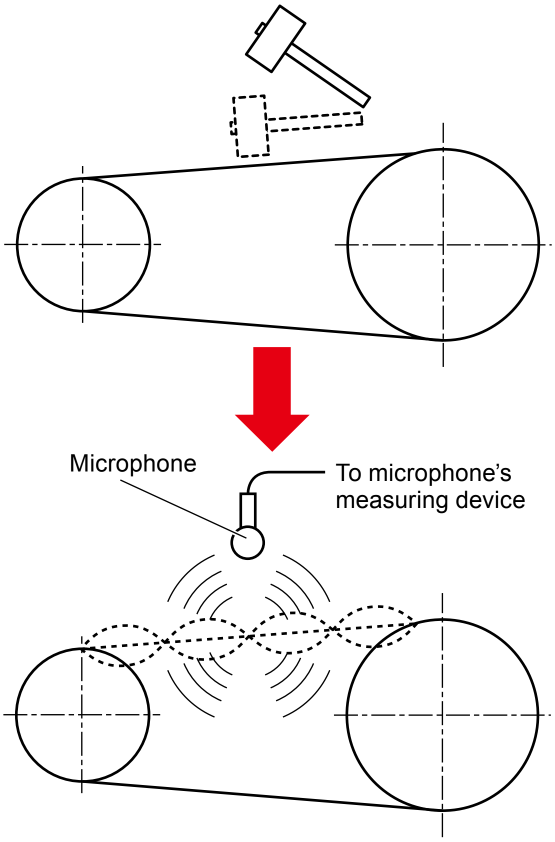


- **How to check if the belt has been tightened to the specified tension by measuring the belt vibrations (acoustics)**

Tighten the belt so that the frequency is between F min and F max.
Measure the sound of the belt when plucking or hitting it in between spans using a sonic tension meter.

Timing belt unit mass	0.019 kg/(10 mm width × 1 m length)
Belt width	8 mm

Mechanism	Ls (mm)	F min (Hz)	F max (Hz)	Recommended belt tension (N)
Re-tie pipe	98	203	236	30.2 to 40.6
Suction mouth	98	203	236	
Suction shutter	62	321	373	
Yarn guide lever	34	586	680	
Magazine	67	297	345	
Splicer	92	217	251	
Bal-Con	102	195	227	
Peg	57	350	405	
Ejector	89	224	260	



Sec 8 Oil Reference Table

No.	Lubricant specification	Lubricant product
1	Extreme-pressure lithium-based grease with mineral oil, NLGI No.2	Shell: Alvania EP Grease 2 Mobil: Mobilux EP-2 Nippon Oil: Epnoc Grease AP-2 Cosmo: Cosmo Grease Dynamax EP 2
2	ISO VG10 (Bearing oil)	Shell: Tellus Oil C10 Mobil: Velocite Oil No. 6 (VG10) Nippon Oil: Super Mulpus 10 Cosmo: Cosmo New Mighty Super 10
3	Extreme-pressure lithium-based grease with mineral oil and molybdenum disulfide (wet type)	Shell: Alvania Grease HDX Cosmo: Cosmo Molybdenum Grease
4	Use the designated product (right column)	Nippon Grease (Murata Parts Sales): NIGACE Klüber: KLUBERPLEX BE31-222
5	Use the designated product (right column)	Murata Parts Sales: Silicone oil
6	ISO VG68 (Lubricant)	Idemitsu: Daphne Mechanical Oil 68 Shell: Tellus Oil C68 Mobil: Teresso 68 Nippon Oil: FBK Oil R068

* Do not mix lubricants made by different manufacturers or which have different specifications.

* NLGI No.: Scale of grease consistency regulated by National Lubricating Grease Institute

* A sample is included for some lubricants.
Refer to the corresponding homepage of each manufacturer for product use and handling.
(The name of the product that is included is noted on the label.)

Sec 1 Adjustment Standard

1-1 Removing & Mounting the Drum

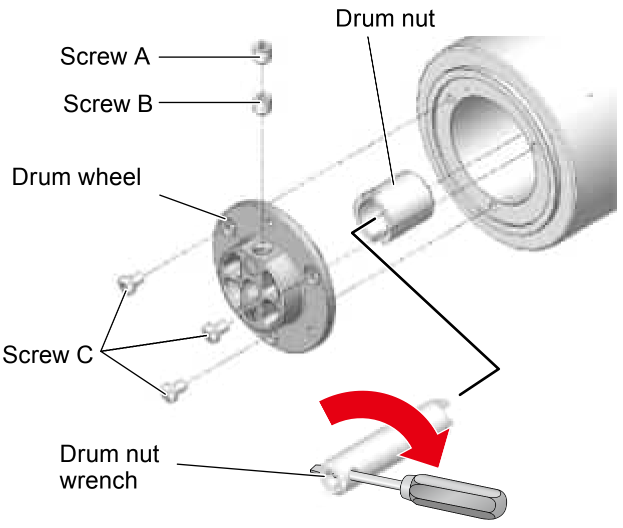
1. **Remove A and loosen B on the drum wheel setting screw.**
2. **Remove the three screws C.**
3. **Pull off drum wheel.**

   * If the drum wheel is secured too tightly and cannot be pulled off, refer to the section below “When the drum wheel is hard to pull off.”
4. **Remove drum nut (left screw) using the drum nut wrench and pull off the drum.**

* To mount the drum, perform the removal procedure in reverse order.

CAUTION

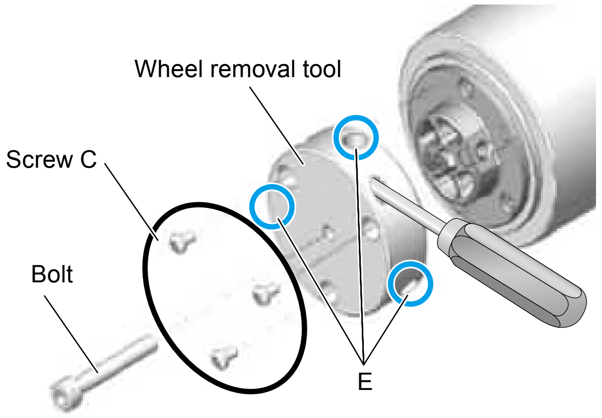
During the mounting procedure, be sure to follow the steps in order (in reverse): 2., 1., etc. If the steps are not followed in order, it could strain the drum motor and lead to damage or failure.



When the Drum Wheel is Hard to Pull Off

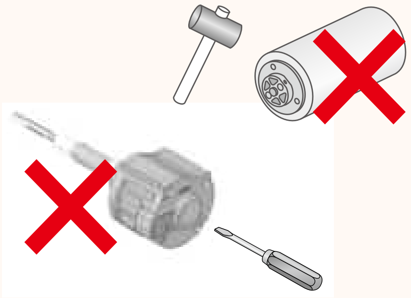
1. **Fix the drum wheel with the three screws C, using the special “wheel removal” tool.**
2. **Support the “wheel removal” tool using a rod-shaped tool such as a screwdriver or a wrench, and screw in the bolt (HC M8 × 50).**

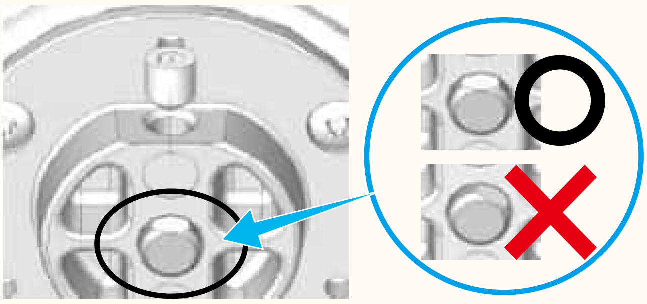
   * If there is a risk of the drum wheel breaking when screwing in the bolt (HC M8 × 50), use the three bolts (HC M5 × 8) to screw in the side E of the wheel removal tool in the figure on the right.
3. **Remove the drum wheel while holding onto the “wheel removal” tool.**



WARNING

- **Do not use or tap with a hammer to remove the drum.**
- **Do not disassemble the internal part of the drum motor.**
- **Make sure the setting screws are positioned precisely and fastened securely on the D cut side of the drum motor shaft when mounting the drum wheel. If they are not positioned precisely or fastened securely, it could cause the drum to accidentally stop or malfunction. In addition, when removing the drum, the drum wheel sometimes gets stuck and is hard to pull off.**



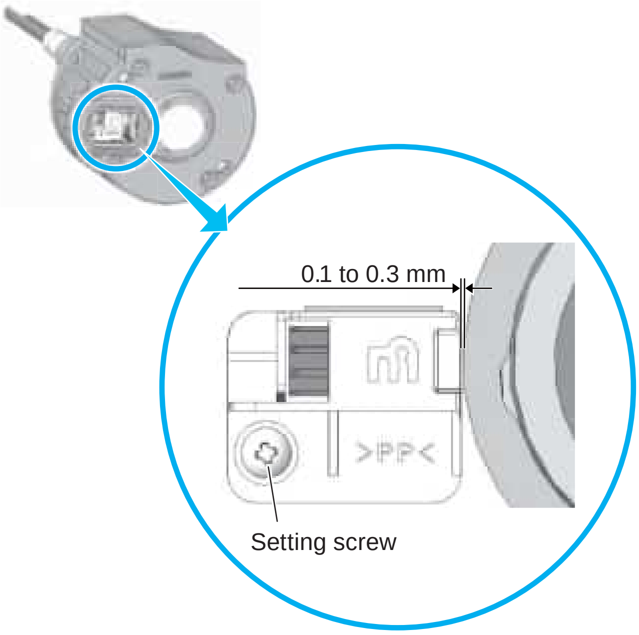


1-2 Drum Pulse Sensor

If a drum sensor alarm occurs, loosen and adjust the setting screw so the space between the drum pulse sensor and the sensor magnet is between 0.1 and 0.3 mm.

WARNING

Pulling off the connector when the power is on can damage the parts.
When pulling off the connector during a sensor replacement or during a motor removal, first be sure to turn OFF the main switch on the machine.



1-3 Switching the Pac Wind

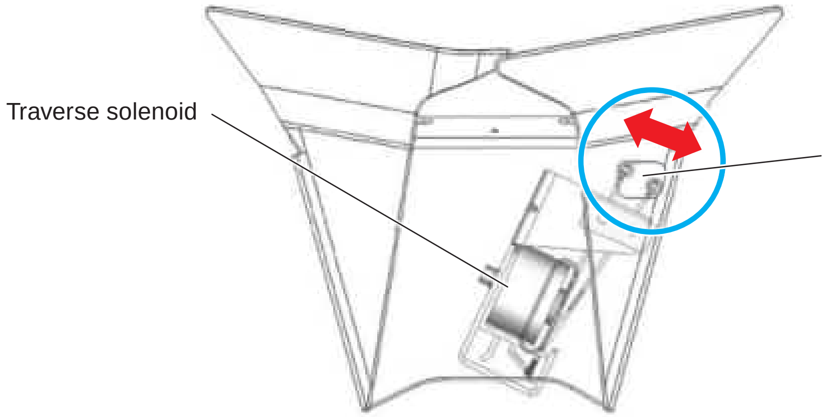
Pac Wind Overview

The traverse solenoid for the drum wind can be switched ON and OFF in the VOS settings under “Pac21 Basic Drum.”
For high speed unwinding, the traverse solenoid turns ON and OFF depending on the ribbon diameter, and as a result, a ribbonless package can be produced.
(For Pac-A, C and D)

[Wind Switching & Winding Settings] (For Pac-A, C and D)

“Pac21 Basic Drum” settings (VOS settings)	Traverse solenoid operation	Winding
2.5 W	Always OFF	2.5 W
2 W	Always ON	2 W

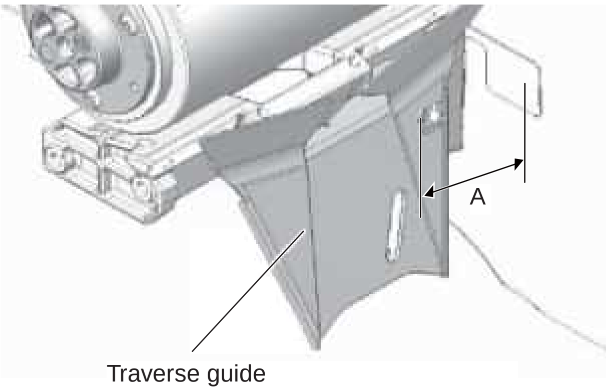
* For Pac-B, it turns ON with 2 W and OFF with 1.5 W.



If the “Pac21 Basic Drum” in the VOS settings is 2 W, it moves to the left position, and in the case of 2.5 W, it moves to the right position.

Pac Wind Fitting Position

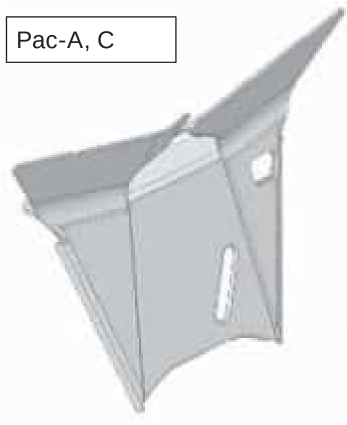
When the traverse solenoid turns ON and OFF, the yarn guide position is determined by the traverse guide position.

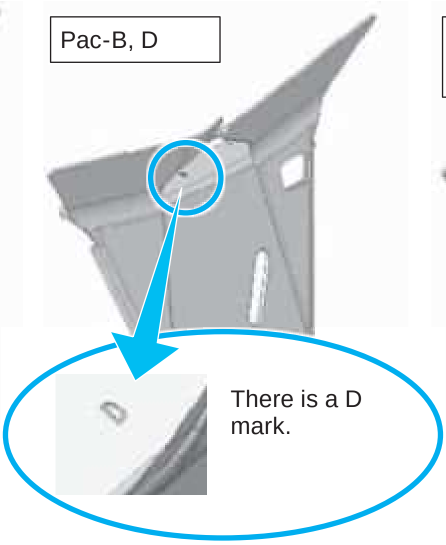

A
Traverse guide

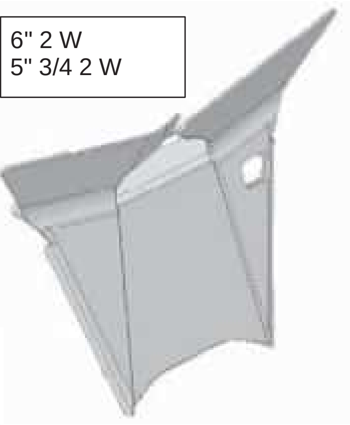
[Reference Position]

Drum	Traverse guide	Length A
Pac-A	Pac-A, C	57 mm
Pac-B	Pac-B, D	57.5 mm
Pac-C	Pac-A, C	57 mm
Pac-D	Pac-B, D	57.5 mm
6" 2 W	6" 2 W 5" 3/4 2 W	57 mm
5" 3/4 2 W		

* The configuration of each traverse guide varies as shown below.

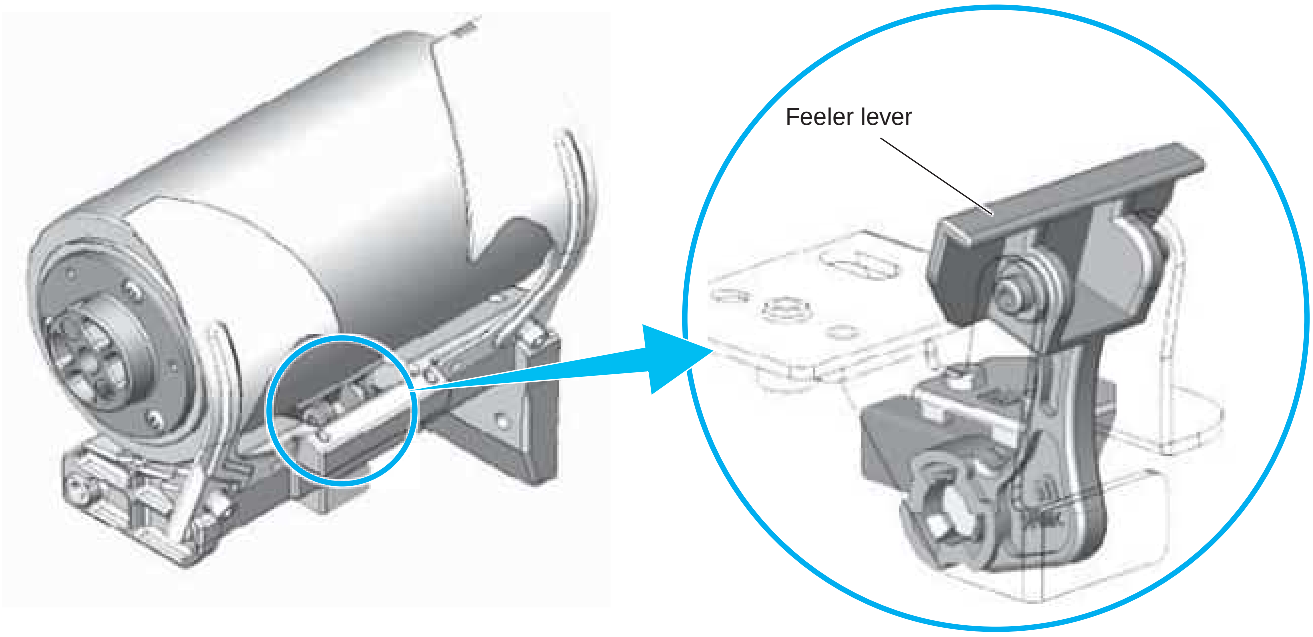



Pac-B, D
There is a D mark.



1-4 Drum Feeler

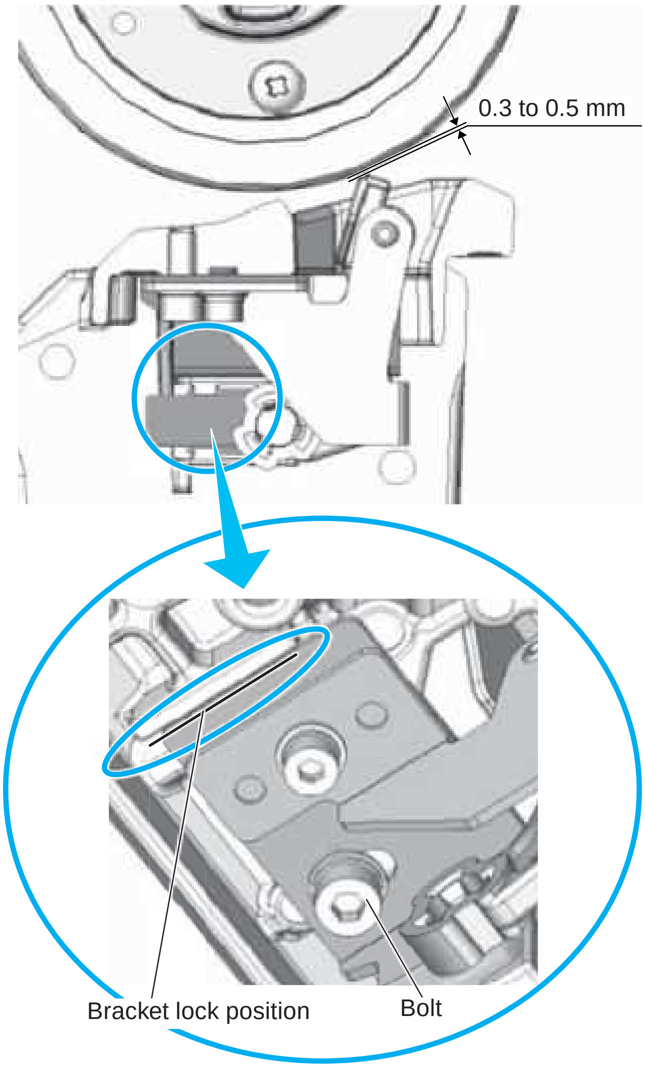
The drum feeler detects drum lapping or entanglement when there is a yarn break near the drum.



1. **Put the feeler lever in the “bracket lock position” (figure on right), and adjust bolt A so the space between the feeler lever and the drum is between 0.3 and 0.5 mm.**

   * If the lever is not put in the “bracket lock position,” the bolt may become loose.

2. **When the drum rotates, make sure that the feeler lever does not vibrate or come into contact with the drum.**



Chapter
4Ba Cradle

Sec 1 Adjustment Standard

1-1 Compressed Air Pressure

The compressed air for P3, P4 and P6 that is used on the top of the unit can be adjusted.

WARNING

Improperly adjusted compressed air can cause an operation error or parts damage.

		P3	P4	P6
Solenoid valve switch type brake	Usage location	Contact pressure Cradle lifter Package brake	Contact pressure adjustment	Take-up tube support
	Standard value	0.35 MPa	0.10 MPa*	0.10 MPa
	Setting range	Change not possible	0.00 to 0.20 MPa	Change not possible

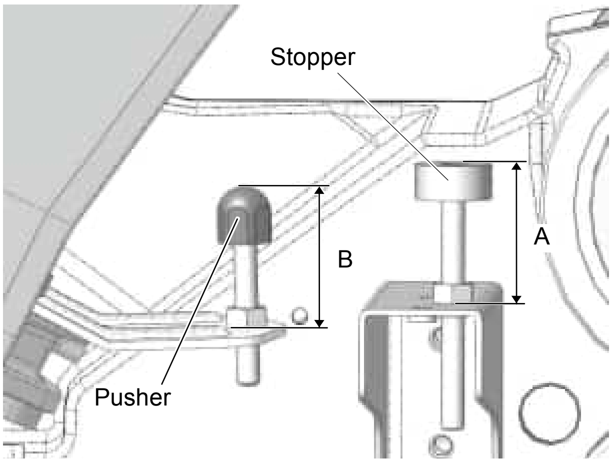
* If the specification is Pac-D, P4 = 0.12 MPa

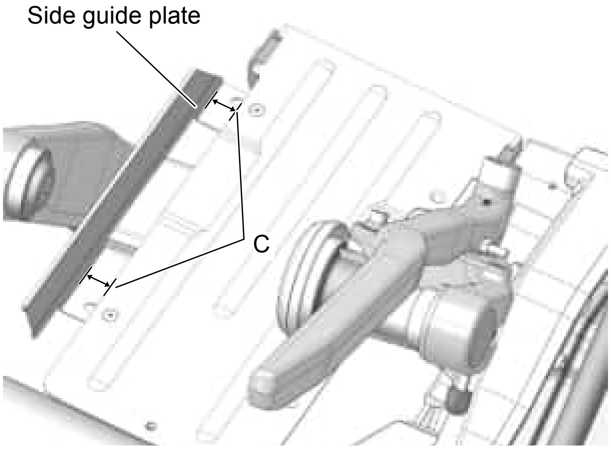
1-2 Cheese Plate

- **Adjustment standard values under general conditions**

A = 36 mm, B = 39.5 mm, C = 17 mm

If the winding diameter is Φ280 mm or greater, the cheese plate comes into contact with the package. In this case, adjust A and B.
If there is a problem with the package winding operation, adjust B and C so that the cheese plate does not come into contact with the package.





1-3 Take-up Tube & Bearing Center Position

The bearing center position is set to the standard value while a new take-up tube is attached.

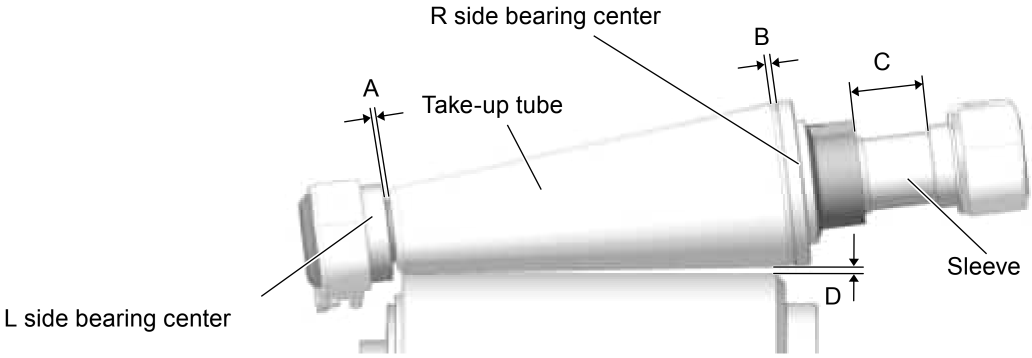
[Standard Values for Standard Specification]
(The standard value varies depending on the package brake method.)

L side bearing center gap	A = 0.5 to 1.5 mm (From the start to the end of the winding)
R side bearing center gap	B = 0.5 to 1.5 mm (From the start to the end of the winding)
Sleeve position	C = 29 to 32 mm (From the start to the end of the winding)
R side drum gap	D = 0.5 to 1.0 mm

* If the dimensions for A, B and C do not meet the standard requirements, replace with a part that complies.

WARNING

- **If not properly adjusted, it can cause an operation error or parts damage, and can also cause injury.**
- **If the take-up tube that is used does not meet the standard requirements, it may lead to hazardous conditions causing major vibration.**



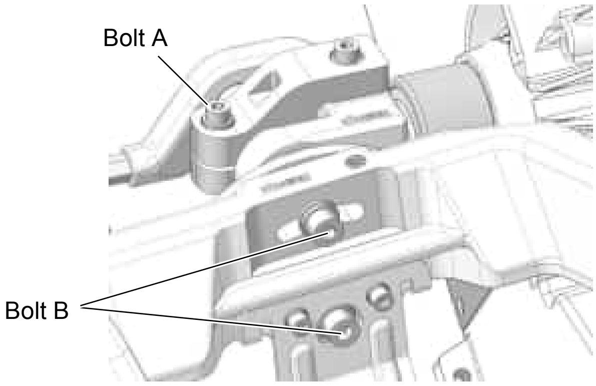
Winding Position & Angle

- **Winding position adjustment method**

Loosen the Bolts A and B. (Total: 3 bolts)

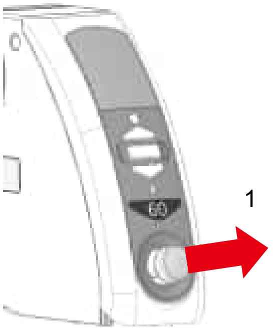
- **Angle adjustment method**

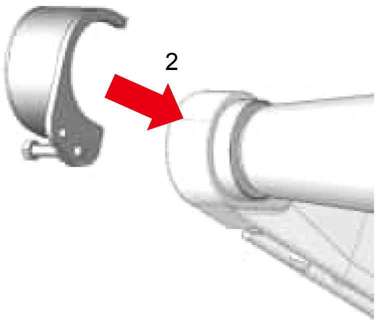
Loosen the bolts B. (Total: 2 bolts)

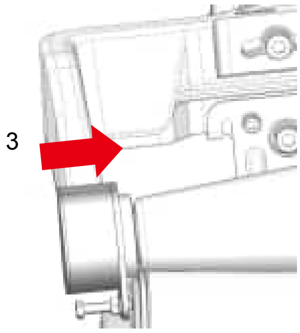


Winding Position Adjustment Jig

When the adjustment jig is used, the consistency in the winding positions between units can be better maintained.





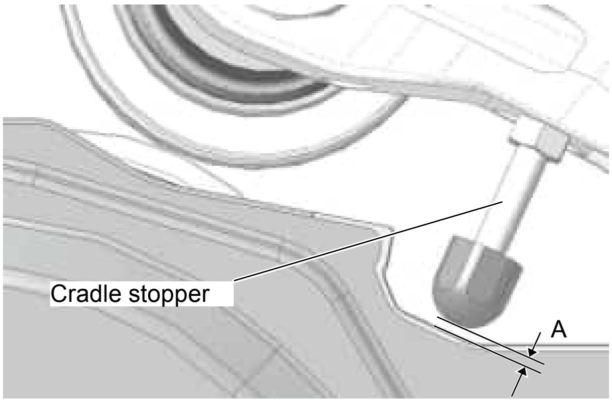


1. **Pull the unit operation switch to fix the take-up tube securely.**
2. **Attach the adjustment jig to the L side bearing center section.**
3. **Move the cradle to the right to perform the positioning operation on the edge of the drum.**

1-4 Stopper

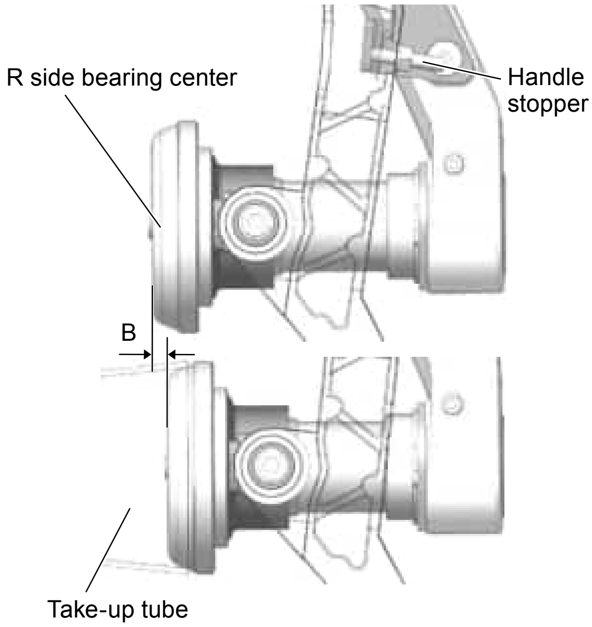
- **Cradle stopper**

Adjust to A = 0.5 mm while the take-up tube is attached.


Cradle stopper
A

- **Handle stopper**

Without the take-up tube attached, adjust the stopper so that the R side bearing center moves (B displacement) 5 mm.


R side bearing center
Handle stopper
B
Take-up tube

1-5 Contact Pressure

The contact pressure is adjusted using the P4 air pressure at the contact spring position.

- **P4 air pressure**

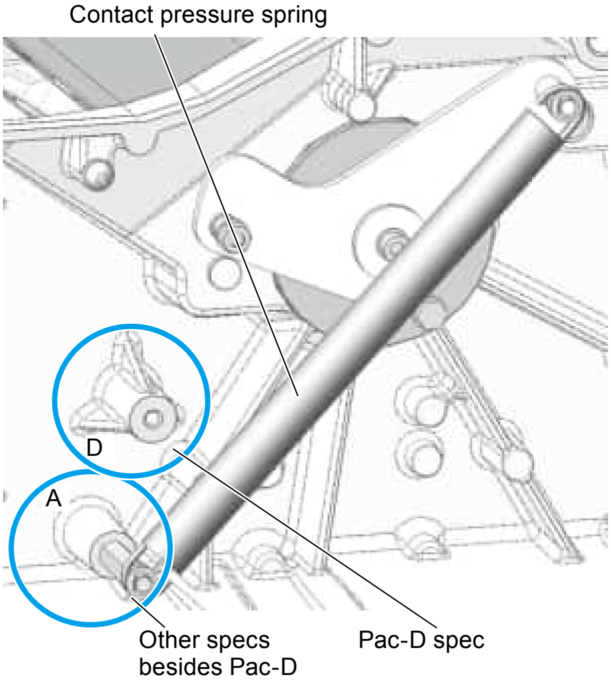
The standard value is 0.10 MPa. When necessary, you can adjust the pressure between 0.00 and 0.20 MPa.

* In the Pac-D specification for the solenoid valve switch type brake, the standard value is 0.12 MPa.

- **Contact pressure spring position**

The position varies depending on the drum specification.

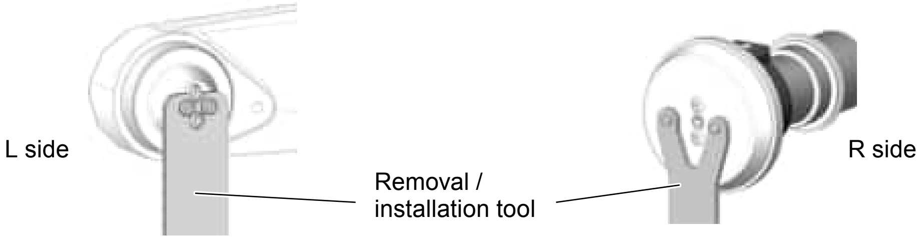
Other specs besides Pac-D	Position A
Pac-D spec	Position D


Contact pressure spring
D
A
Other specs besides Pac-D
Pac-D spec

Sec 2 Maintenance

2-1 Bearing Center Replacement Method

The screws can be screwed in and removed using a removal / installation tool (used for both L and R sides) while making sure the bearing center is held securely.



WARNING

If you do not use the removal / installation tool, the screws may not tighten completely. As a result, the bearing center could fall off during operation and lead to an extremely dangerous situation.

2-2 Lubrication for the Slide Section of R Side Bearing Center

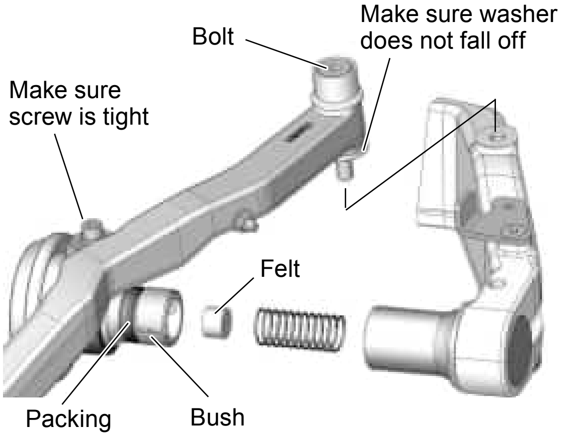
The slide section needs to be lubricated regularly in order to maintain stable operation.

Frequency	Lubricant	Guideline
3 months	Silicone oil (clear)	Lubricate packing, bush, and felt

CAUTION

If lubrication is delayed, it could lead to faulty sliding, major vibration and a decline in package quality.

1. **Remove the bolt and take off the bearing center.**
2. **Apply 0.5 cm³ to the packing and bush.**
3. **Lubricate the felt with 1 to 2 cm³.**



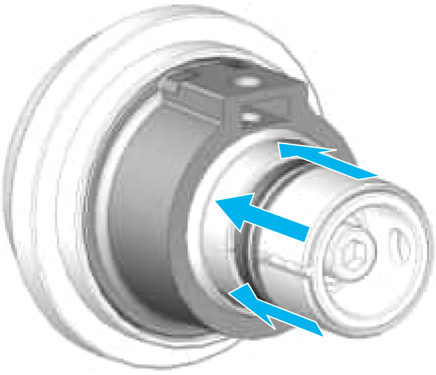
2-3 Cleaning the Slide Section of R Side Bearing Center

If any cotton fly is jammed inside the slide section, it can prevent or obstruct the installation of the take-up tube, etc. It is therefore, important to remove the cotton fly regularly.

Frequency	Guideline
6 months	Remove any cotton fly that is jammed inside

CAUTION

- Be careful not to scratch or damage the slide section (packing and bush) when cleaning.
- Re-assemble the slide section after cleaning and lubrication.



2-4 Lubrication for the Bearing Center section of R Side Bearing Center

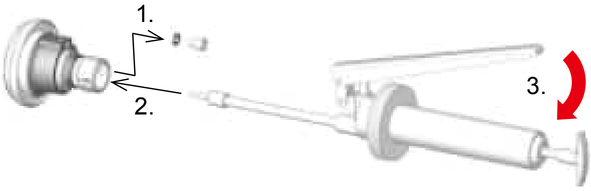
The bearing center is an extremely important part when creating the package, and as a result, it requires regular lubrication.
The L side uses a bearing center that does not require lubrication.

Frequency	Lubricant	Guideline
6 months	BE31-222 (Kluber)	Lubricate bearing center

CAUTION

Delaying lubrication leads to bearing damage and a decline in package quality.

1. **Remove the R side bearing center bolt.**
2. **Insert the grease pump nozzle all the way inside.**
3. **Lubricate 0.5 g per winding unit.**



CAUTION

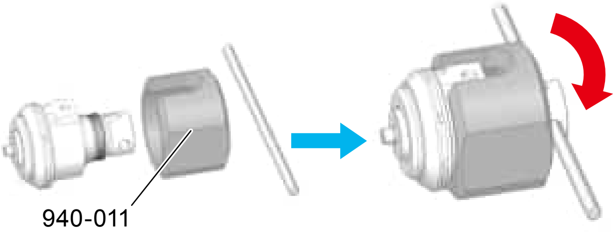
Too much grease lubrication causes seizure or grease leakage.
Ensure that there is no dirt or metal dust inside during lubrication.

2-5 R Side Bearing Replacement

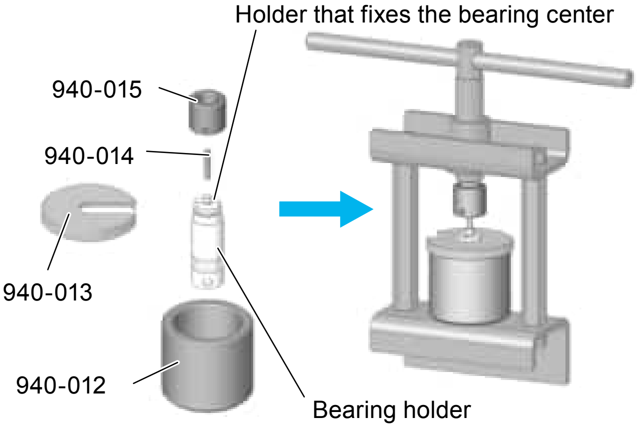
R Side Bearing Center Disassembly Method

1. **Rotate and remove the holder once the bearing center has been removed.**

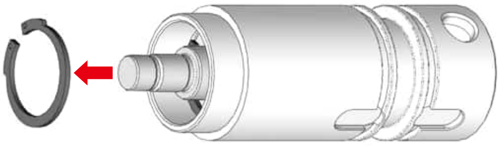
* After removing the M6 bolt, insert the bar (handle).



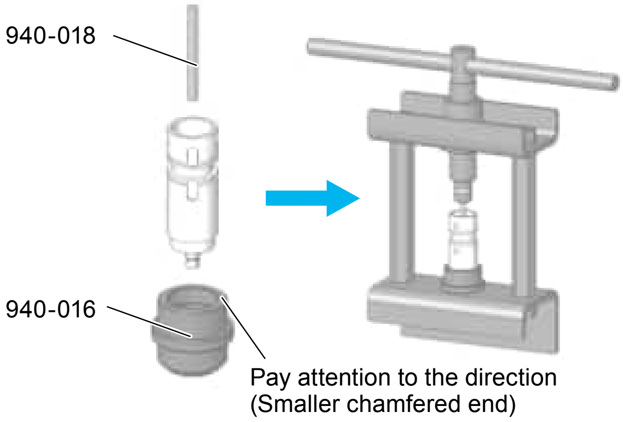
2. **Use the jig to remove the holder that fixes the bearing center.**



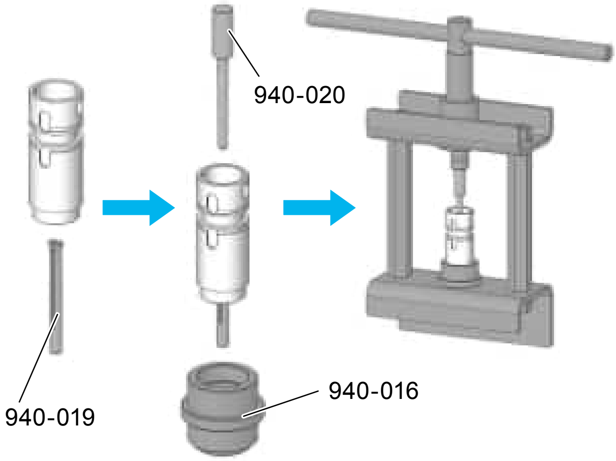
3. **Remove the snap ring.**



4. **Remove the bearing.**

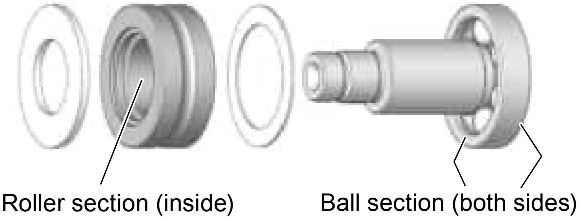

940-018
940-016
Pay attention to the direction
(Smaller chamfered end)

5. **If the only shaft of the bearing is removed, take off the bearing with a special tool.**


940-020
940-019
940-016

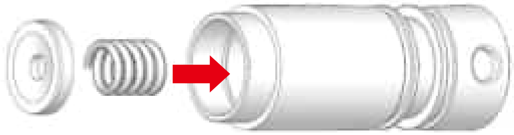
R Side Bearing Center Assembly Method

1. **Apply grease to the bearing roller and the ball sections (0.1 to 0.2 cm^3 for each).**

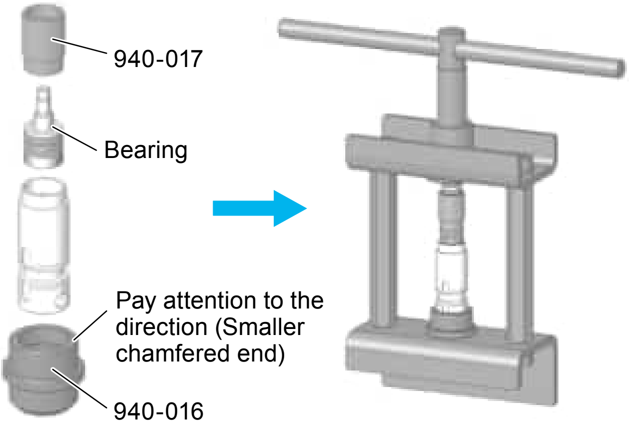

Roller section (inside)
Ball section (both sides)

2. **Mount the spring and the washer onto the bearing holder.**

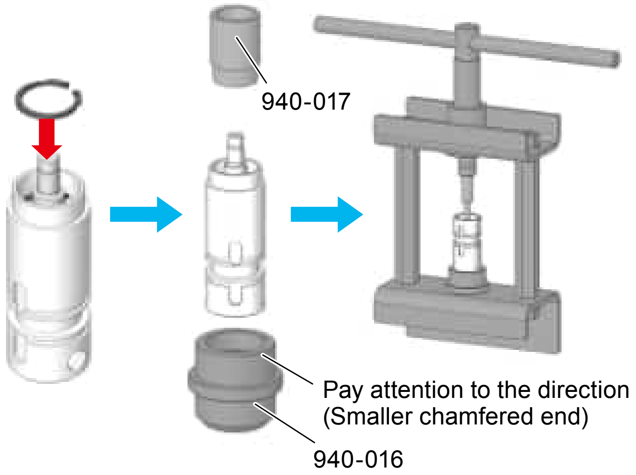
   * Put the washer so the indented side is on the outside.



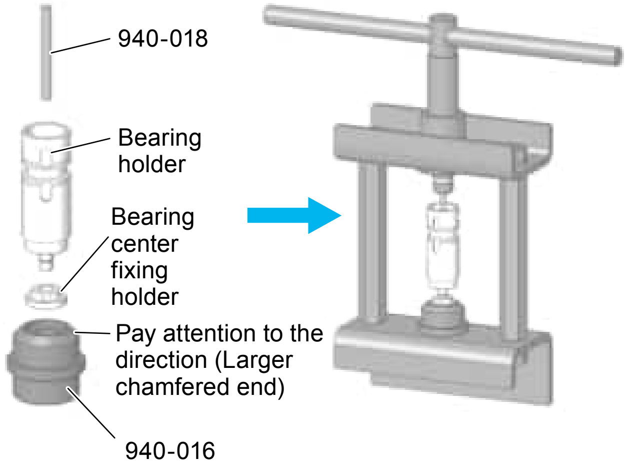
3. **Use the jig to press fit the bearing into the bearing holder.**


940-017
Bearing
Pay attention to the direction (Smaller chamfered end)
940-016

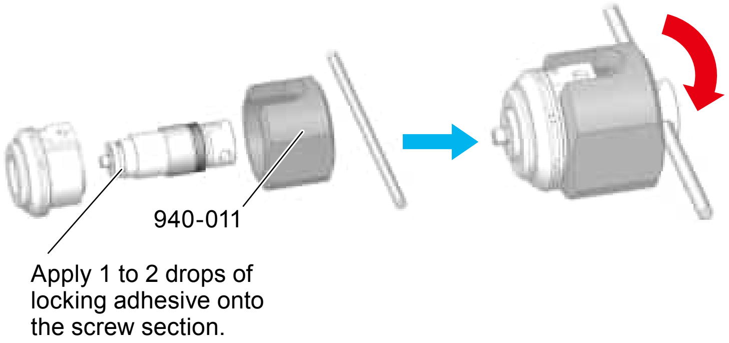
4. **After mounting the snap ring onto the front side of the plastic cover, press in the ring into the groove.**


940-017
Pay attention to the direction
(Smaller chamfered end)
940-016

5. **Press fit the holder that mounts the bearing center into the shaft.**
   - * Press it in all the way so that there is no gap, and make sure that the shaft protrudes out the same length as before.
   - * If you press in too much, you may damage the bearing or tool.

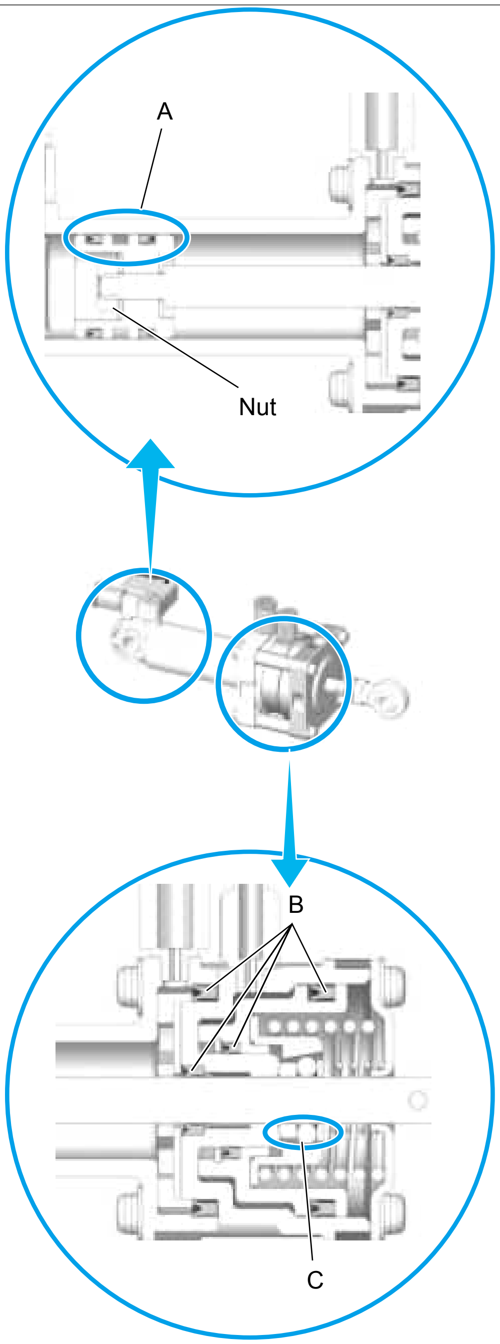

940-018
Bearing holder
Bearing center fixing holder
Pay attention to the direction (Larger chamfered end)
940-016

6. **Mount the holder.**


940-011
Apply 1 to 2 drops of locking adhesive onto the screw section.

2-6 Cradle Lifter & Damper Maintenance

Frequency	Lubricant	Guideline
6 months	Extreme-pressure lithium-based grease with mineral oil, NLGI No.2 * Do not use grease containing molybdenum disulfide.	Remove the dirty or old grease and apply the new grease.



1. **Remove the old grease from the lubrication points.**
   Scrape out the dirt and contamination in the grease buildup using a flathead screwdriver that does not have a sharp edge., etc.

CAUTION

Be careful not to scratch or damage the packing.

2. **Apply grease.**

- **2 packing lubrication locations and grease groove (A)**

  * Pay special attention when lubricating as the 2 packing parts are setup in different directions.

  * Coat the inner and outer circumferences of the packing with grease, but be careful not to fill the interior of the packing.

  * Fill the grease grooves (piston center grooves) with grease.
  Also lightly coat the cylinder inner surface with grease.

- **4 packing lubrication points (B)**

  * Coat the inner and outer circumferences of the packing with grease, but be careful not to fill the interior of the packing.

- **Ball section (C)**

  * After lubricating, make sure that the 10 balls are pressed in adequately. Even if any lubrication spills out, you do not need to wipe it clean.

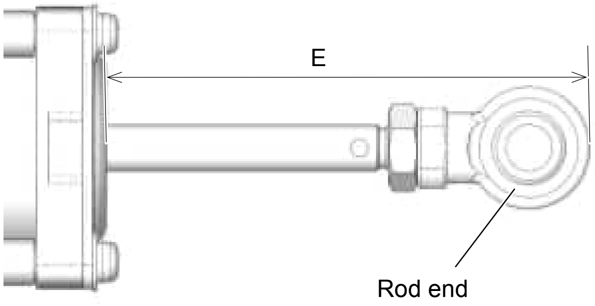
CAUTION

The nut is fixed at the set torque value. Do not remove during maintenance.

Rod End Position

- **When removing the rod end during maintenance**

Mount the rod end so that when extended to the maximum length, it meets the requirements for standard value E = 82.0 to 83.5 mm.



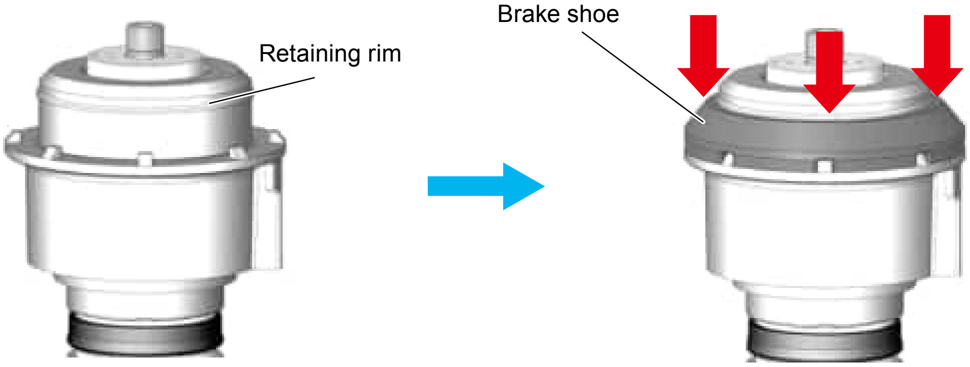
Sec 3 Consumables

3-1 Brake Shoe Replacement

If the brake shoe is worn causing a failure or problem, replace it with a new part.
Press down the edges of the brake shoe so that it fits inside the retaining rim.

CAUTION

If the brake shoe is not pressed down all the way, it can cause malfunction or damage.

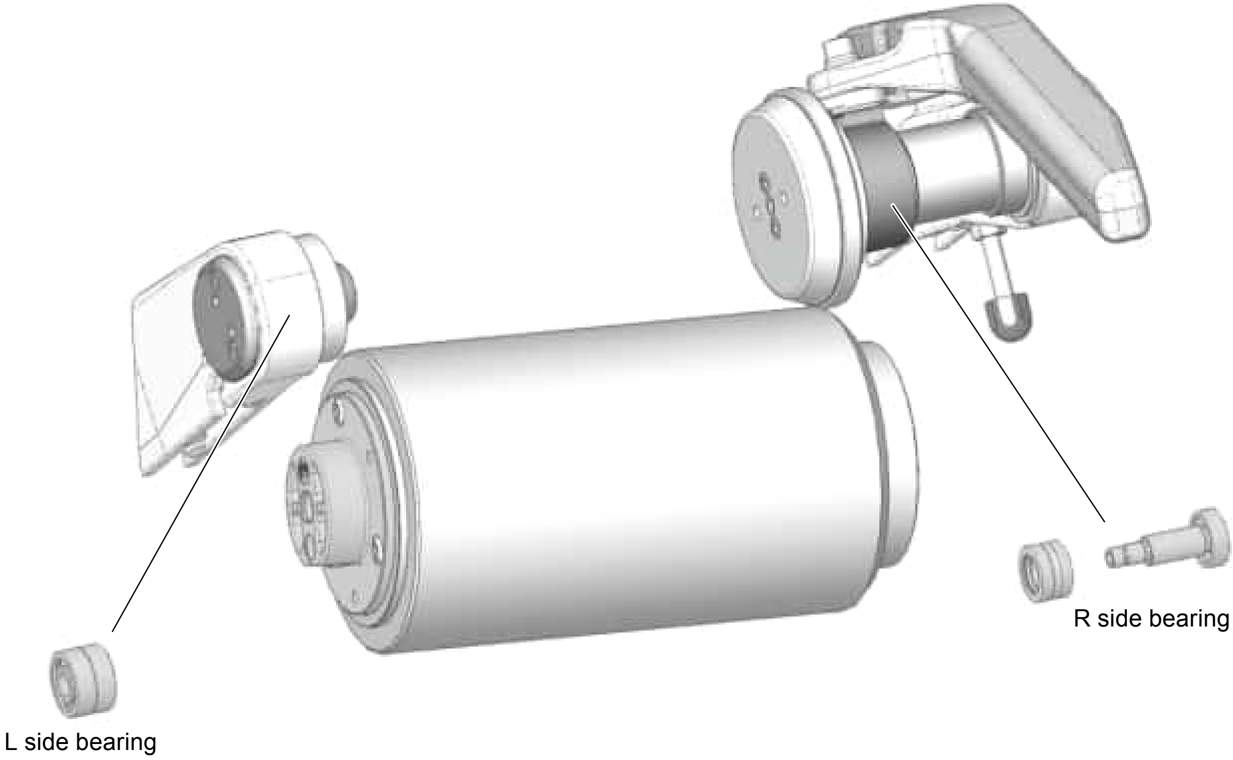


[When the brake shoe is removed]

[When the brake shoe is fitted]

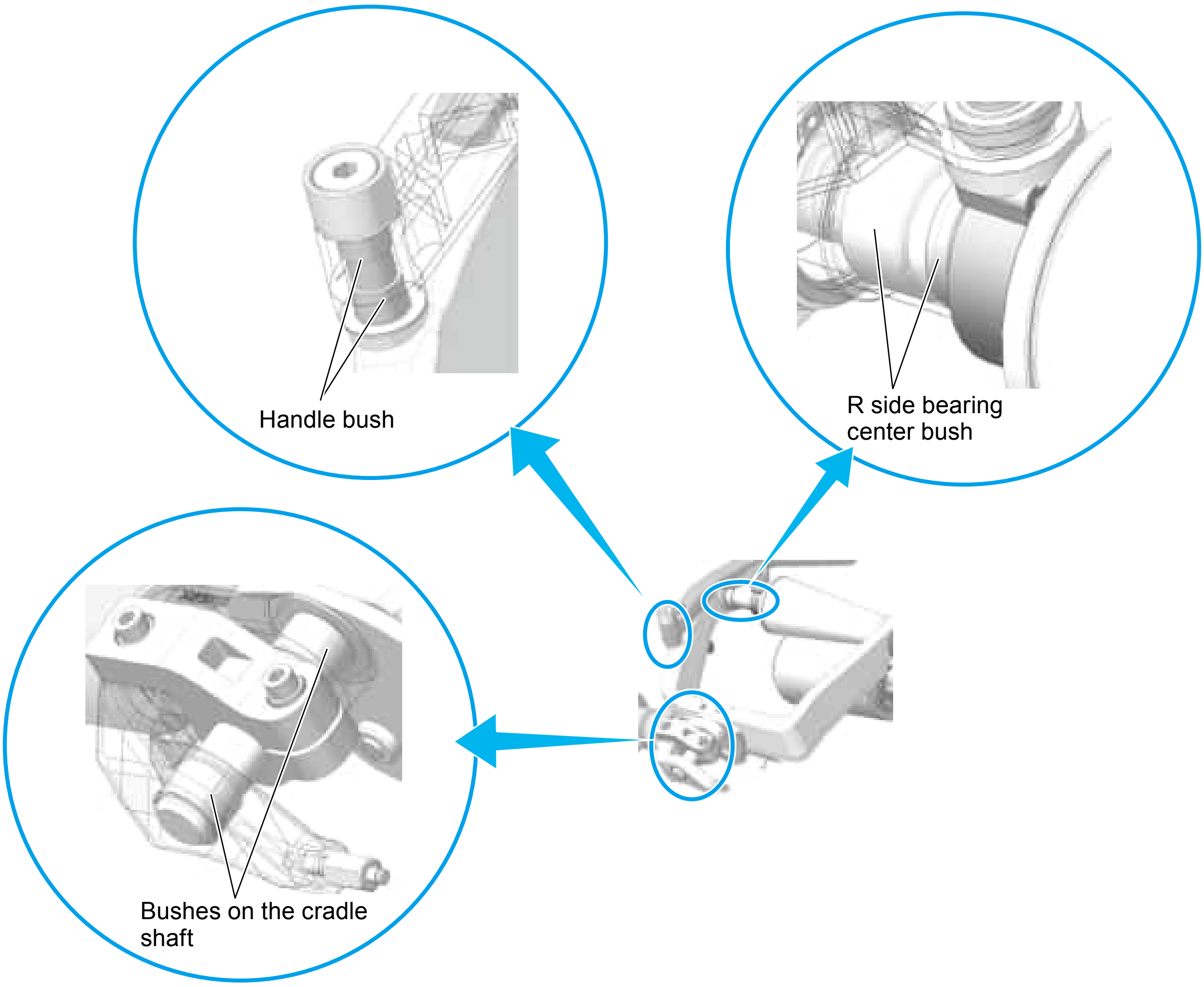
3-2 Bearing Replacement

If there is an abnormal or clicking noise coming from the bearing center, replace it with a new part.



3-3 Bush Replacement

If the bushes are worn causing a failure or problem, replace the worn bush or bushes with a new part.


Handle bush
R side bearing center bush
Bushes on the cradle shaft

Chapter
4Ca Waxing

Sec 1 Adjustment Standard

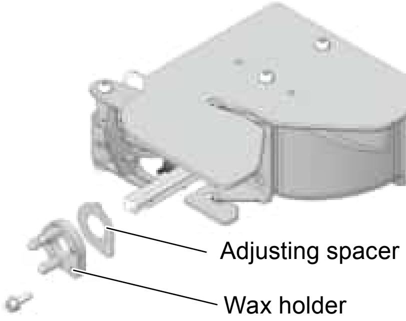
1-1 Amount of Wax Applied

Adjust the degree of contact between the wax and the yarn by changing the number of spacers used. Remove the wax holder to replace the adjusting spacer.

Reference for No. of Adjusting Spacers

Yarn count applied	No. of spacers (t = 0.2 mm)
Ne 3 to 20	0
Ne 21 to 40	1
Ne 40 to	2

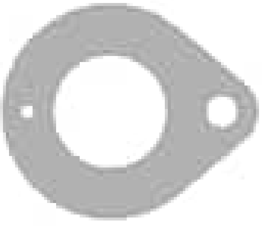
* Figures vary slightly depending on the winding conditions.

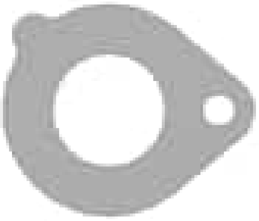


* There are two standard thicknesses for the adjusting spacers:
0.2 mm and 0.1 mm. Finer adjustments can be obtained by combining the spacers with different thicknesses.

[Spacer combination (example)]

	Spacer combination (No. of spacers)	
Target value (mm)	**0.1 mm**	**0.2 mm**
0	---	---
0.1	1	---
0.2	---	1
0.3	1	1
0.4	---	2
0.5	1	2
0.6	---	3


0.1 mm

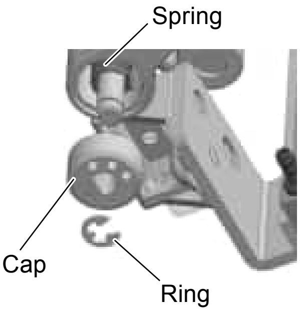

0.2 mm

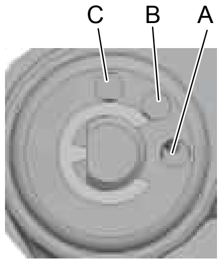
1-2 Adjustment of Wax Holding Force

Reduce the holding force if a deep groove can be made in the wax surface that touches the wax holder.

1. **Remove the ring and cap.**
2. **Change and adjust the hole that holds the spring.**

* The factory setting is position A.





(Tight) A-B-C (Loose)

1-3 VOS Settings

The VOS settings are listed below. Change the setting conditions when necessary.

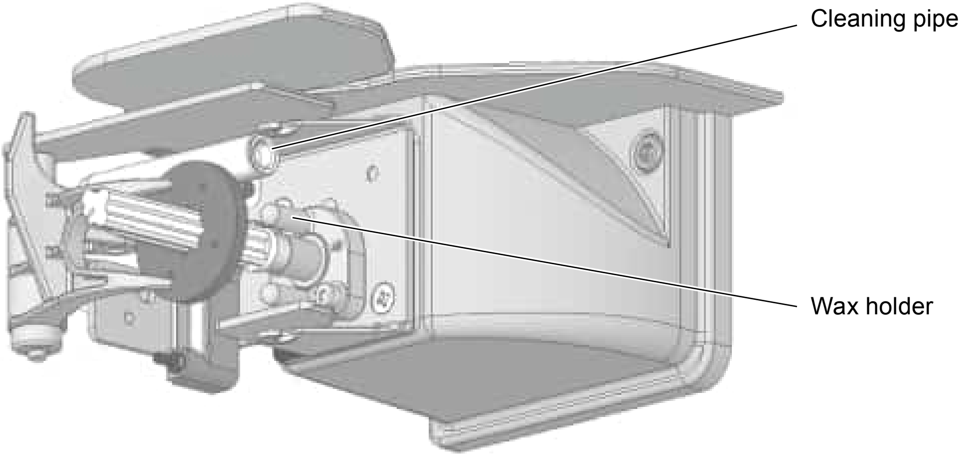
Waxing Device	Select “With”
Wax Motor Rotation Speed	Set the required rotation speed
Wax Rotation Direction	Set the rotation direction
Wax Remaining Amt Alarm	Input the time period when necessary

Sec 2 Maintenance

2-1 Cleaning

If there is any cotton fly or fly wax buildup, the waxing operation may not perform correctly.

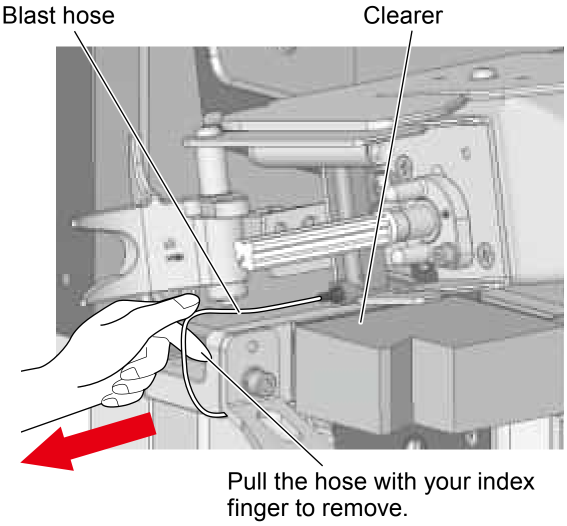
Frequency	Item	Guideline
Weekly	Wax holder	Remove cotton fly and the wax buildup around the wax holder
	Cleaning pipe	Remove cotton fly that is clogged in the pipe


Cleaning pipe
Wax holder

2-2 Blast Hose Removal from Clearer

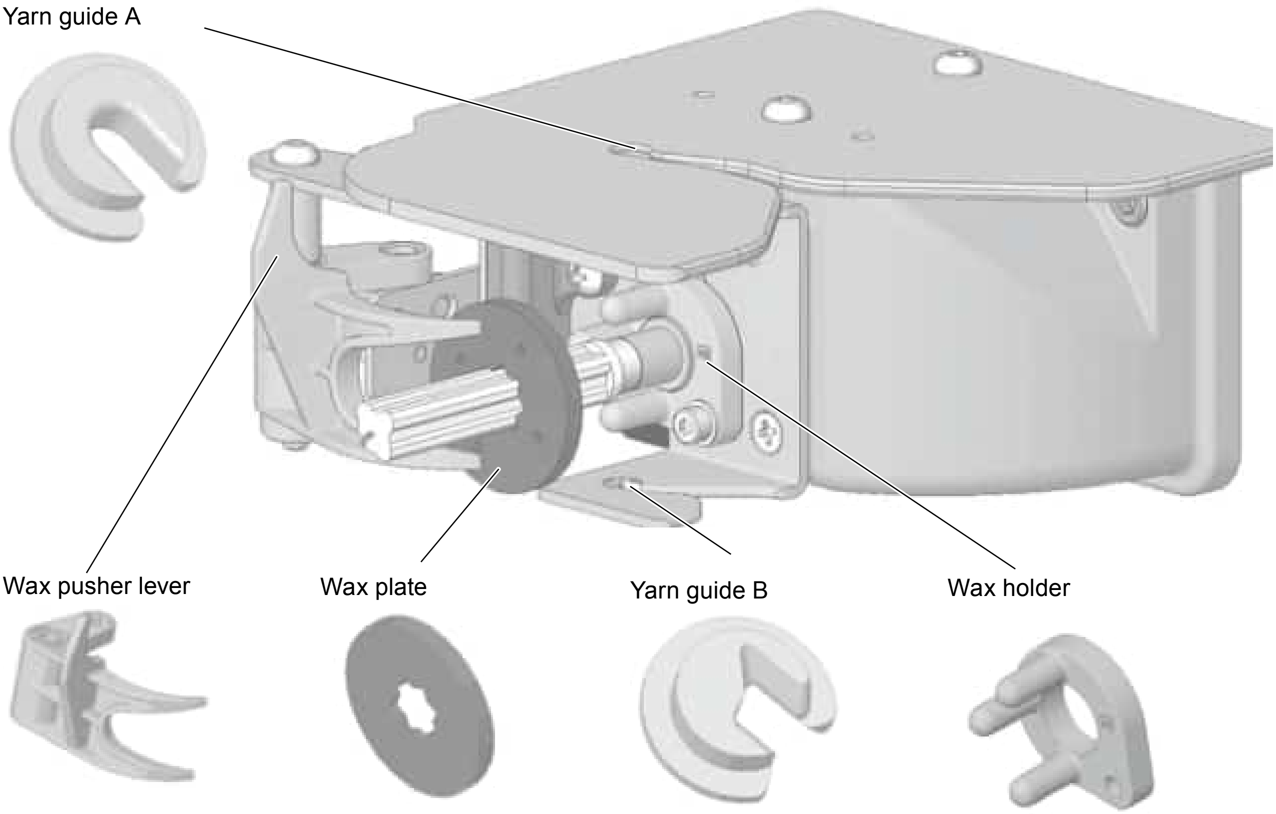
1. **Put your left index finger around the hose.**
2. **Remove the hose by pulling straight toward the left side.**
   The hose can be removed from the joint.

* When reconnecting the hose to the joint, insert the hose all the way in so that it does not come off.
In addition, if the hose comes off due to deterioration or being warped, replace the hose with a new one.


Blast hose
Clearer
Pull the hose with your index finger to remove.

Sec 3 Consumables

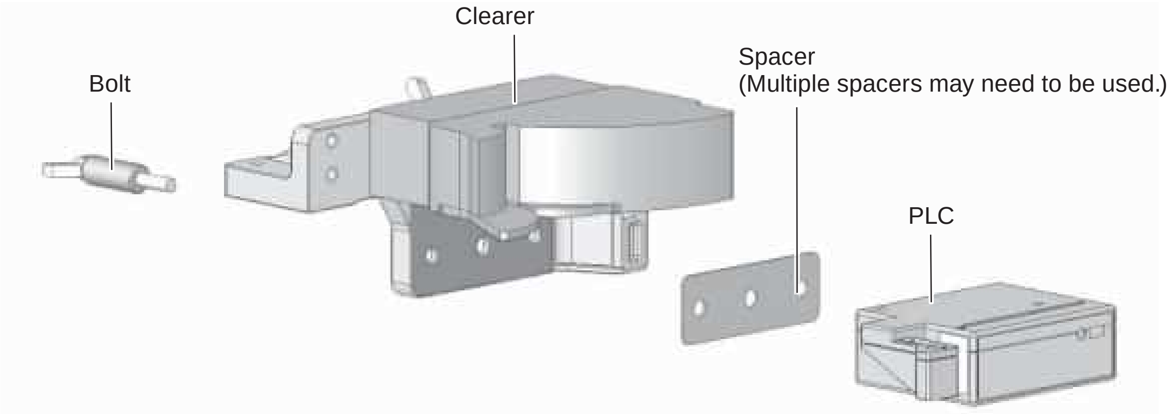
If the parts below are worn causing a failure or problem, replace the worn part or parts with a new one.


Yarn guide A
Wax pusher lever
Wax plate
Yarn guide B
Wax holder

Sec 1 Adjustment Standard

1-1 Mounting Position

The mounting position for the PLC21 is adjusted using spacers.
Suitable spacers are already fitted at the time of shipment.
Change and adjust the spacer fittings when changing the yarn path, such as during the replacement of a clearer, for example. (Refer to Chapter 4Da, 1-2)



[Spacer set]
Individual spacer sets are available to fit your clearer head.

Set	Head type	Clearer maker
0.8 mm x 1 0.3 mm x 2	iMH-C15, 20, 30 iMH-C15/F30, 20/F30, 30/F30 iMH-C15/F30+PP, 20/F30+PP	USTER
0.8 mm x 1 0.3 mm x 2	i-QON A: MU15, 20 i-QON AX: MU15, 20 i-QON A XP: MU15, 20	PREMIER
1.2 mm x 1 0.3 mm x 2	TK: YM-ZENIT (F, FP, N, FN, FPN)	LOEPFE
0.7 mm x 1 0.3 mm x 2	SU-12, 18, 24, 30, 33, 35, 37 (With MICRO-EYE)	KEISOKKI

1-2 Spacer Selection & Replacement

Use the adjustment jig included to first select the correct spacer and then refit it.

* Use the measurement jig included to measure the thickness of the spacer using the procedure below.

1. **Remove only the PLC, leaving the clearer still mounted, and then set the yarn to be used from the bobbin to the take-up tube.**

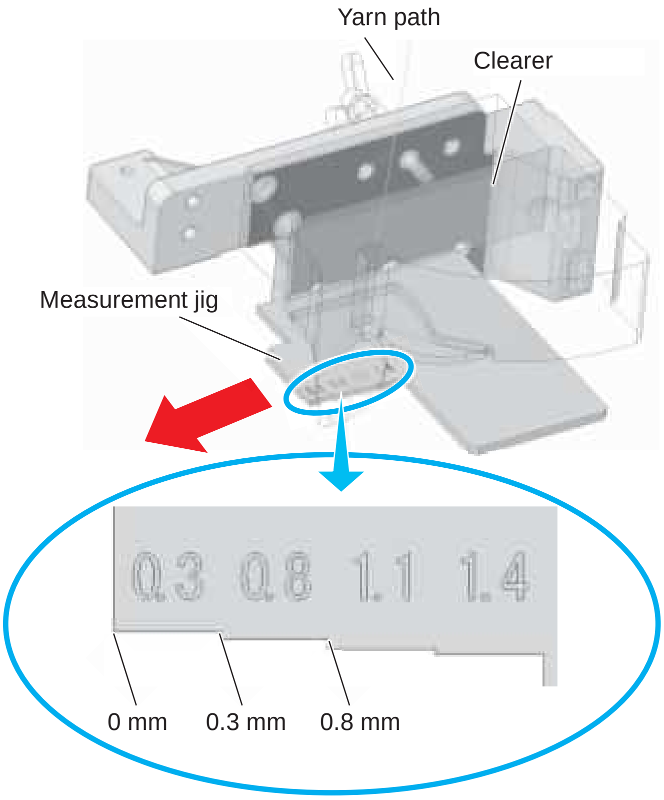
2. **Press the measurement jig up against the mounting side for the PLC. Adjust it following the direction of the arrow in the picture on the right, and check the position where the yarn touches.**

3. **Perform the above measurement over one span (12 winding units).**

   The most common value is the right thickness for the spacer.

   * Fit the spacer with the same thickness onto all the winding units.

4. **Adjust the spacers included to the right thickness and fit them onto all the winding units.**

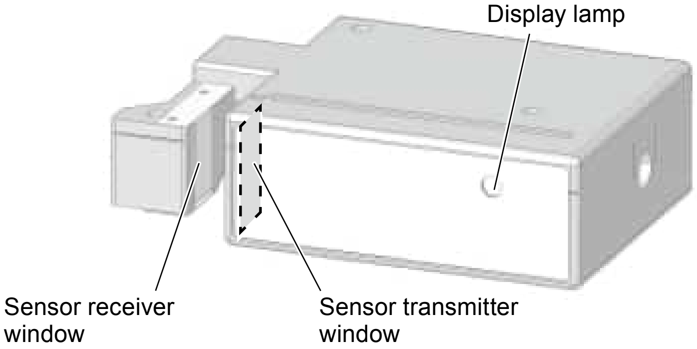


Sec 2 Maintenance

2-1 Inspection

Inspect and check the display lamp.

Green	Normal operation
Red	The following lists the probable causes. - Not enough light passes through due to a dirty sensor receiver or transmitter window. * Clean the window(s) following the procedure in Section 2-2. - Outside the specification range - Faulty PLC21



2-2 Cleaning

Using one of the following methods, clean the cotton honey or any other buildup on the sensor receiver or transmitter window.

- **Wipe clean with a dry, soft cloth.**

  or
- **Wipe with a cloth or cotton swab moistened with water, or water diluted with mild detergent.**

Frequency

Once a month, or when the red lamp lights up

CAUTION

- If there is a scratch on the window, it may not measure correctly. Only clean the window using the methods mentioned above.
- Do not use alcohol based agents (thinner, benzine, etc.).
- Do not disassemble the PLC. Otherwise the PLC may become faulty or damaged.

Chapter 4Ea Suction Mouth

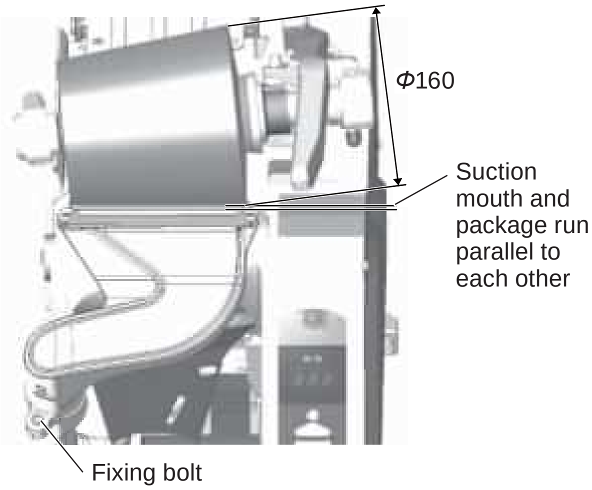
Sec 1 Adjustment Standard

1-1 Parallelism

1. **Attach the package on the side with the larger diameter (dia. 160).**
2. **Loosen the bolt that fixes the suction mouth and adjust the suction mouth so that it runs parallel with the Φ160 mm size package.**

* The tightening torque for the fixing bolt is between 20.0 and 25.0 N•m.

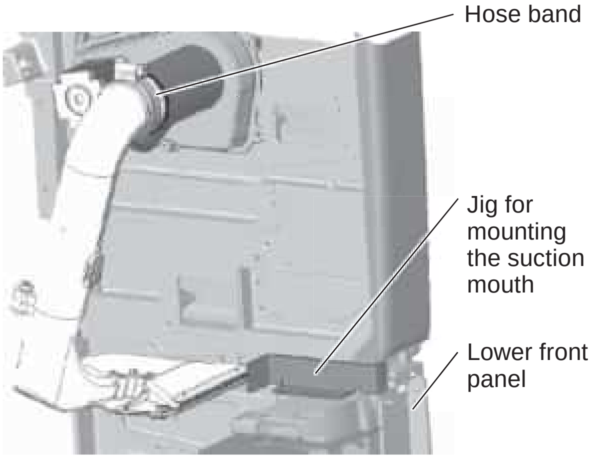
* To change the angle, always adjust the home position of the suction mouth.



1-2 Arm Home Position

- **After leveling the angle of the suction mouth, adjust the home position. If the suction mouth does not run parallel (not level) with the package, the home position cannot be adjusted correctly.**

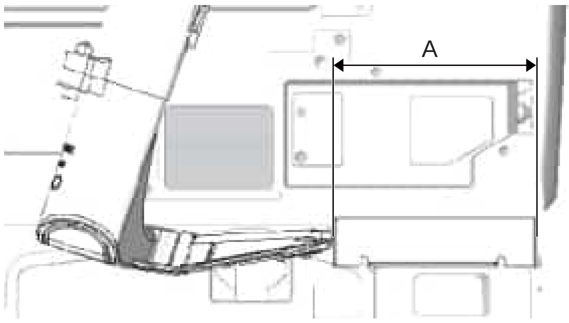
Perform the adjustment while the power is turned on. If the mouth has been removed, refer to section 2-1 for directions on how to mount the suction mouth.

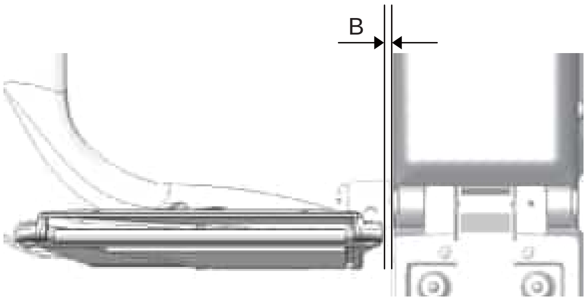


1. **Remove the lower front panel.**
2. **Perform the “Suction mouth adjustment” procedure, mount the arm, put it in the home position and fix it in place using the VOS maintenance screen settings.**
3. **Check the position using the suction mouth mounting jig, and loosen the hose band to make adjustments.**

* Adjustment the standard value for the arm home position
A = 124.3 ± 0.5 mm (forward and backward)
B = 4 ± 1 mm (right and left)

* As a general guideline, the tightening torque for the hose band is between 3.6 and 4.1 N•m.

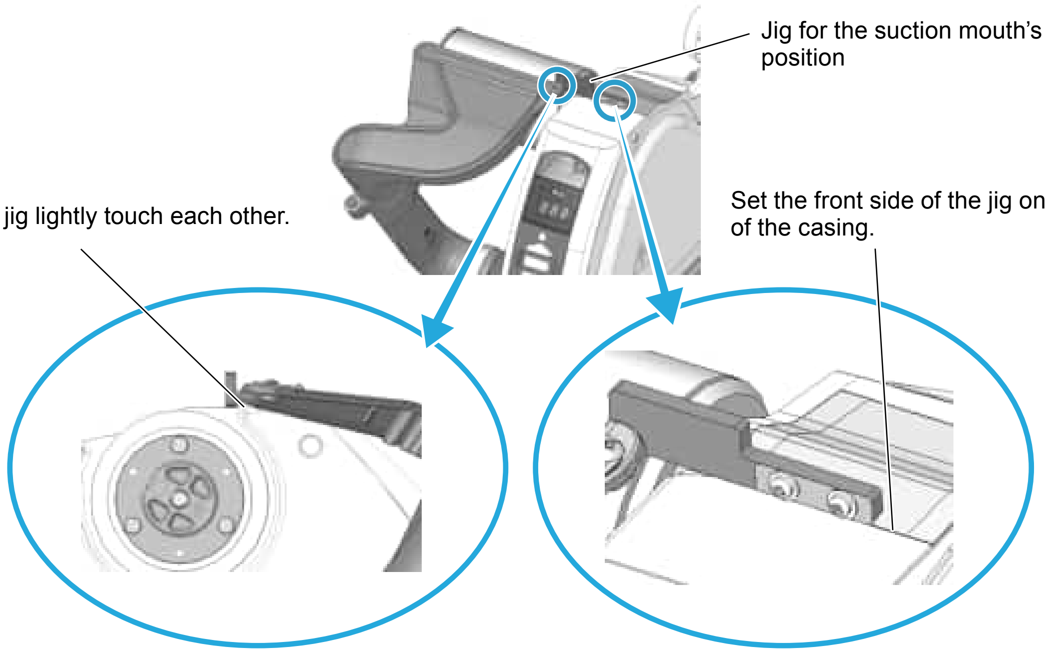




4. **Set the arm in the home correction position, and adjust or correct the home position using the jig.**
Press the alarm reset button (middle), and adjust the arm position using the top and bottom alarm reset buttons so that the arm moves to the home correction position and lightly touches the jig for correcting the home position.

Press down the alarm reset button (middle) for one second to return the arm to the standby position.

* The arm's standard home position is ± 0.5 mm from the jig.



Jig for the suction mouth's home position

The mouth and jig lightly touch each other.

Set the front side of the jig onto the rib of the casing.

1-3 Comb

Loosen the screws and adjust.
When there are a lot of "Yarn End Find Errors," the problem can sometimes be fixed or improved by adjusting the comb.

- **Standard position setting**

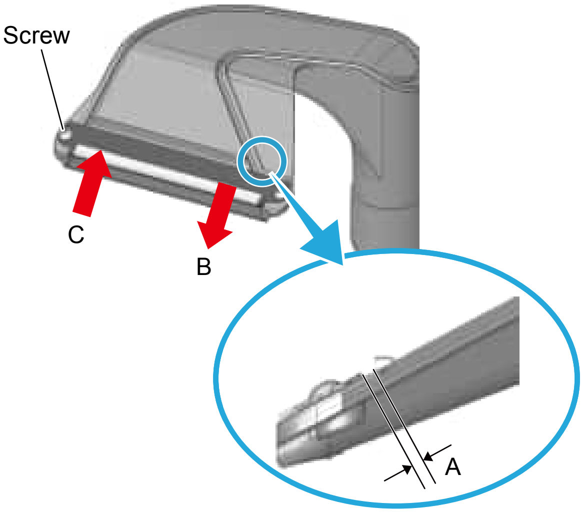
Dimension A: Mount so that this dimension is 3 mm ± 0.5 mm

- **When using yarn that does not come out the end smoothly**

Pull out towards you in the direction indicated by "B," and fix the position.

- **When using yarn that splits into multiple ends**

Push back all the way in the direction indicated by "C," and fix the position.



1-4 VOS Settings

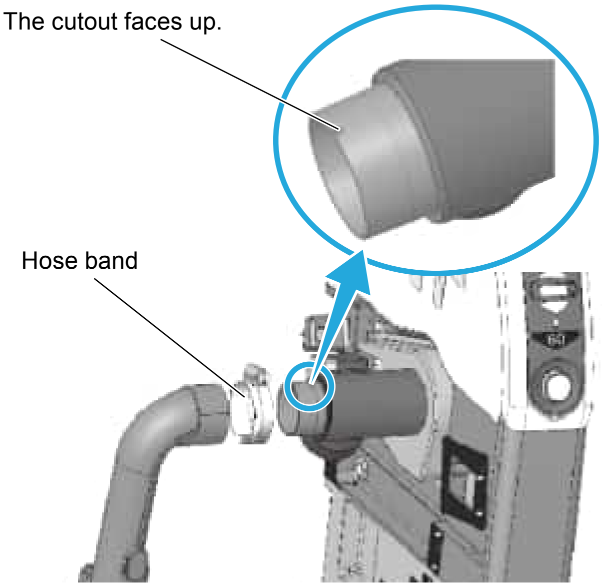
The VOS settings are listed below. Change the setting conditions when necessary.

Suction Mouth Proximity	For standard use, select "STD" (Value range: -10 to STD to +10) * Set a value closer to +10 to adjust the suction mouth position closer to the package, and set a value closer to -10 to adjust the suction mouth position further away from the package.
Suction mouth motion mode	Normally set to mode 1, but you can select from modes 1, 2 or 3
Suction force for mouth	Normally set to STD, but you can select any level from -5 to STD * To reduce the suction force, set the level closer to -5.

Sec 2 Maintenance

2-1 Mouth Attachment

Mount so that the cutout on the shaft is on top and the arm faces down.
Always adjust the home position for the arm (refer to 1-2).
The tightening torque for the hose band is between 3.6 and 4.1 N•m.

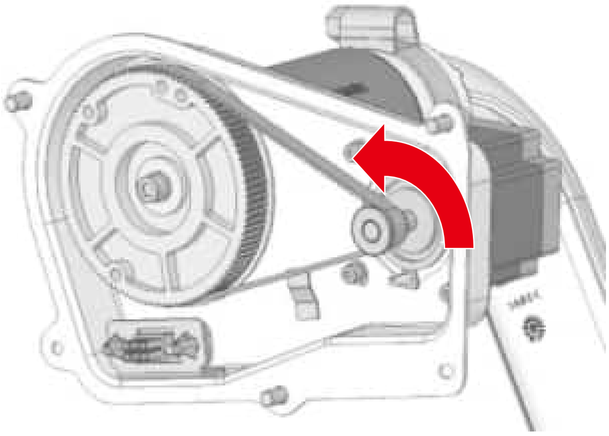


2-2 Tightening the Timing Belt

Turn and adjust the motor.

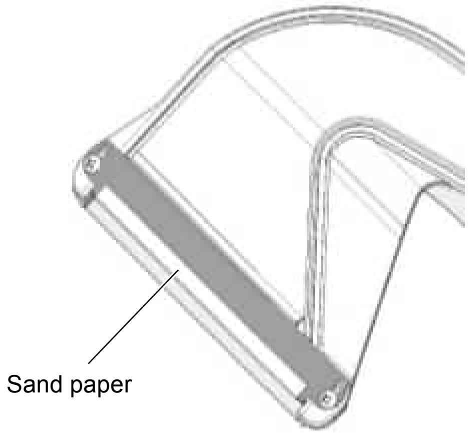
CAUTION

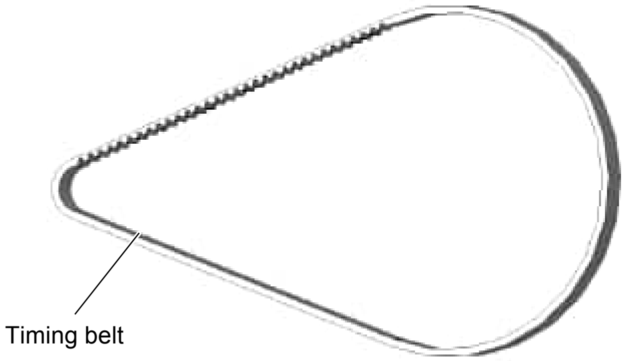
Ensure that the belt is not too slack or too taut. (Recommended tension: 30.2 – 40.6 N)
Malfunctions could occur if the tension is out of the recommended range.

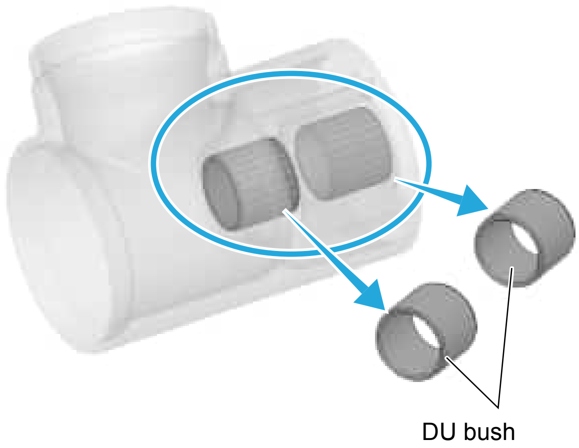


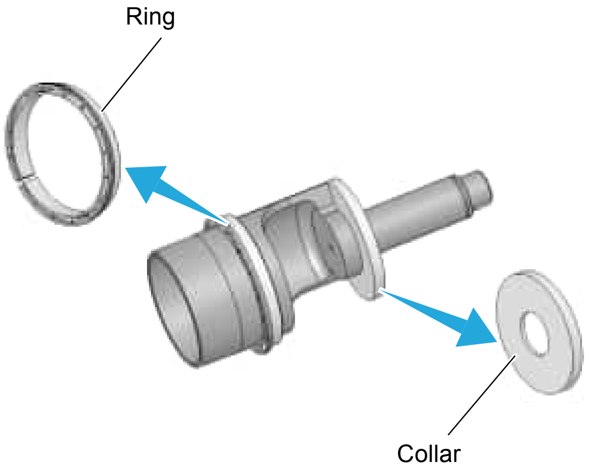
Sec 3 Consumables

If the parts below are worn causing a failure or problem, replace the worn part or parts with a new one.




Timing belt




Ring
Collar

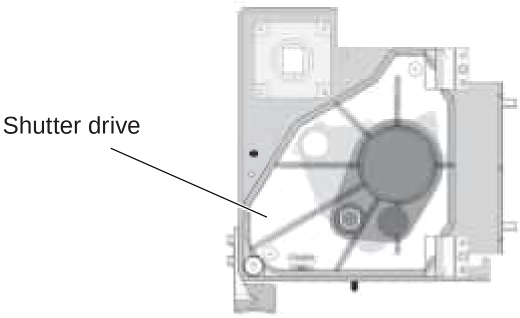
Chapter

4Fa Suction Shutter

Sec 1 Maintenance

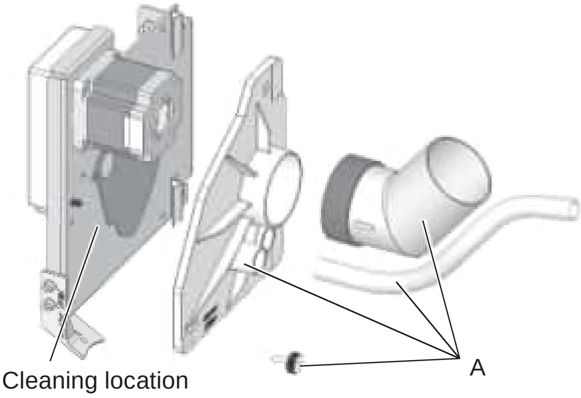
1-1 Inspection

Perform inspections once a week to check if cotton fly has built up in the shutter drive section.



1-2 Cleaning

Clean the shutter drive if EH alarm occurs due to cotton fly or yarn buildup.
Remove all the parts A indicated in the figure on the right, and take out any cotton fly or yarn waste.

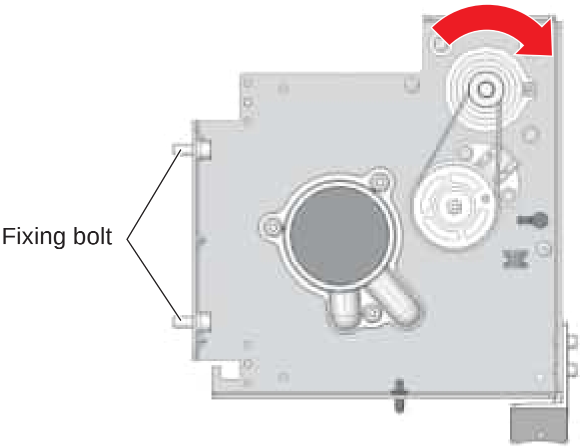


1-3 Tightening the Timing Belt

Turn and adjust the motor.

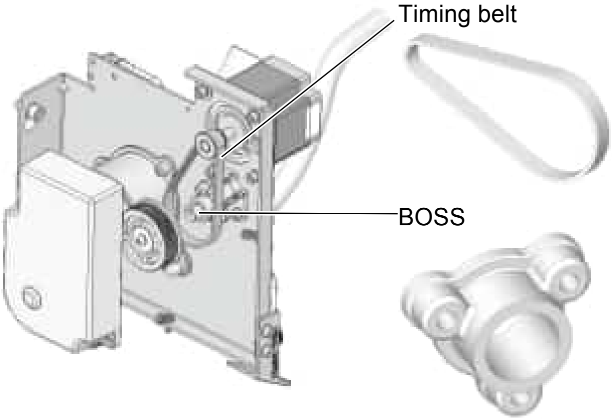
CAUTION

Ensure that the belt is not too slack or too taut. (Recommended tension: 30.2 – 40.6 N)
Malfunctions could occur if the tension is out of the recommended range.



Sec 2 Consumables

If the parts below are worn causing a failure or problem, replace the worn part or parts with a new one.



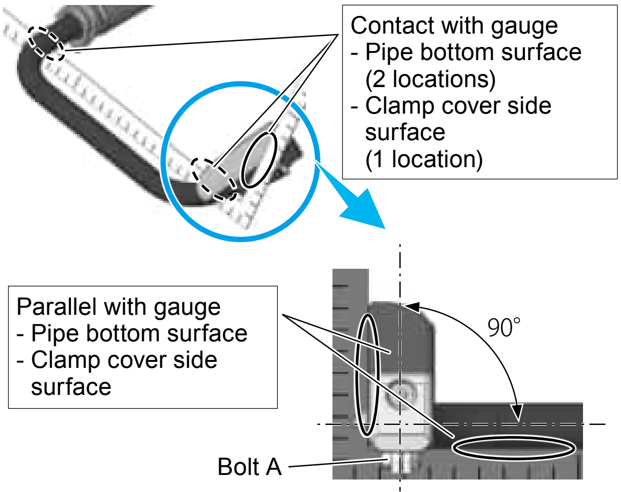
4Ga Re-tie Pipe

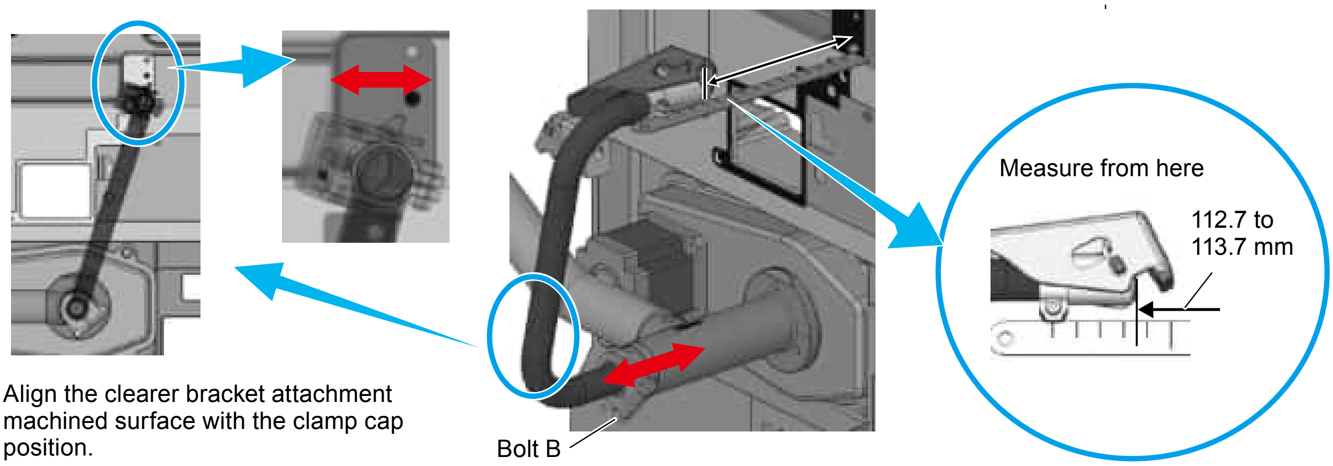
Sec 1 Adjustment Standard

1-1 Clamp Angle & Position

1. **Align pipe in horizontal position and loosen bolt A.**
2. **Use an L shaped gauge to attach the clamp and pipe so they are perpendicular.**
3. **Remove the clearer bracket and loosen bolt B.**
4. **Place the gauge on the clearer bracket attachment machined surface and adjust so that the cap bottom end tip distance is between 112.7-113.7 mm.**

* Adjust the position of the pipe in the thrust direction.


Contact with gauge
- Pipe bottom surface
(2 locations)
- Clamp cover side
surface
(1 location)
Parallel with gauge
- Pipe bottom surface
- Clamp cover side
surface
90°
Bolt A


Align the clearer bracket attachment
machined surface with the clamp cap
position.
Bolt B
Measure from here
112.7 to
113.7 mm

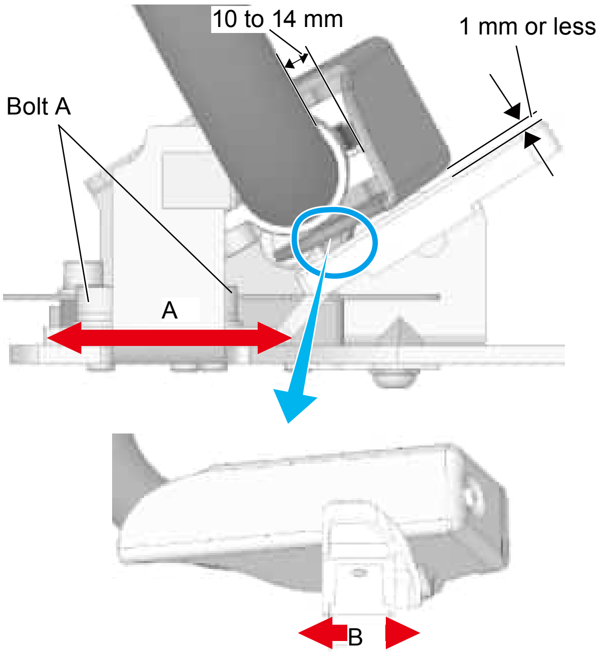
1-2 Opener Cam Clearance

When the Retie Pipe is Positioned on the Bottom

(Comes into contact with the home position stopper)

1. **Loosen bolt C, and adjust A as indicated in the figure so that the distance between the clamp cover and the opener cam on the lower side is always less than 1 mm (so that there is no contact between them during operation and the clamp assembly opens).**
2. **Adjust B as indicated in the figure so that the distance between the clamp cover and the pipe is always between 10 and 14 mm.**

* This adjustment is to ensure that no unnecessary force is applied to the clamp cover.


10 to 14 mm
1 mm or less
Bolt A
A
B

When the Retie Pipe is Positioned on the Top

1. **Move the pipe manually so that the attachment side of the clearer is in line (vertically) with the edge of the clamp cover.**

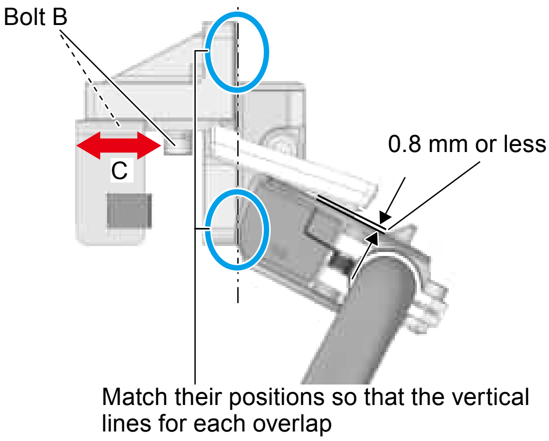
2. **Loosen bolt B, and adjust C as indicated in the figure so that the distance between the clamp cover and the opener cam on the upper side is always less than 0.8 mm (so that there is no contact between them during operation and the clamp assembly opens).**

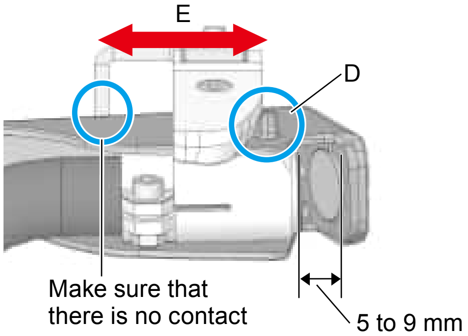
3. **Move the straight section of the opener cam so that it overlaps with the protruding section of the clamp cover (D).**

   * Ensure that the clamp cover does not come into contact with the upper end stopper.

4. **Adjust the opener cam (location E indicated in the figure) so that the clearance in front of the mouthpiece (between the front end of the mouthpiece and the disc) is always between 5 and 9 mm.**

   * This adjustment is to ensure that no unnecessary force is applied to the clamp cover.


Bolt B
C
0.8 mm or less
Match their positions so that the vertical lines for each overlap

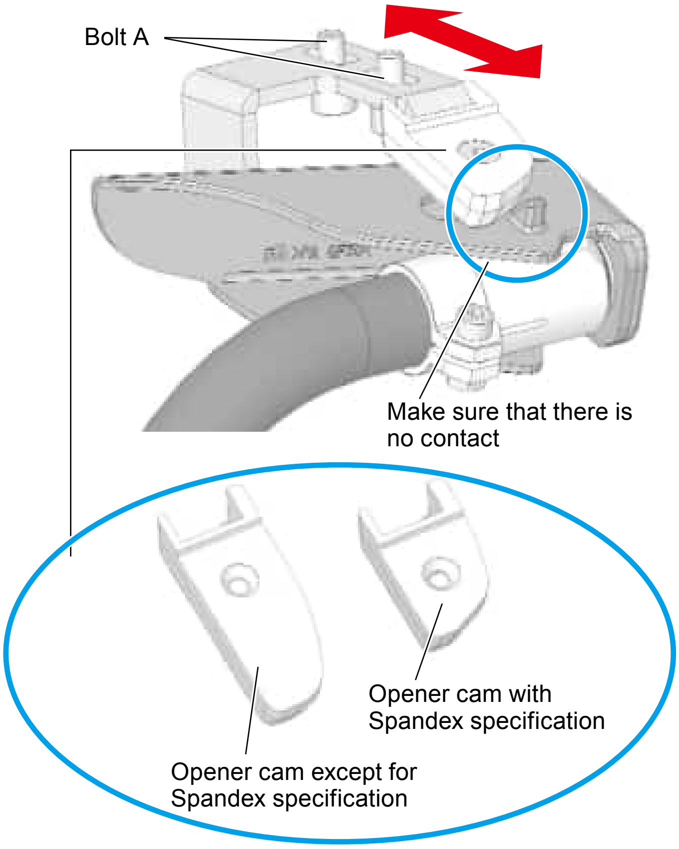

E
D
Make sure that there is no contact
5 to 9 mm

CAUTION

If the clamp cover and the opener cam come into contact with each other, any unnecessary or excess force applied to the clamp cover can cause damage to parts, opening malfunction or pipe malfunction. On the other hand, if the gap is too big, the opening operation may not perform correctly and similarly, cause damage to parts or opening malfunction.

1-3 Spandex Specification

After adjusting the clamp and opener cam, check to make sure that they do not come into contact with each other at the temporary stop position during the splicing operation.
If they do come into contact with each other, loosen bolt A and adjust the bracket position so that they do not touch. Thereafter, ensure that the opener cam space is appropriate.


Bolt A
Make sure that there is no contact
Opener cam with Spandex specification
Opener cam except for Spandex specification

CAUTION

Always replace the opener cam with a short type cam.

1-4 VOS Settings

The VOS settings are listed below. Change the setting conditions when necessary.

RetiePipeKinkPrevention	Select from: OFF / Level1 / Level2

Sec 2 Maintenance

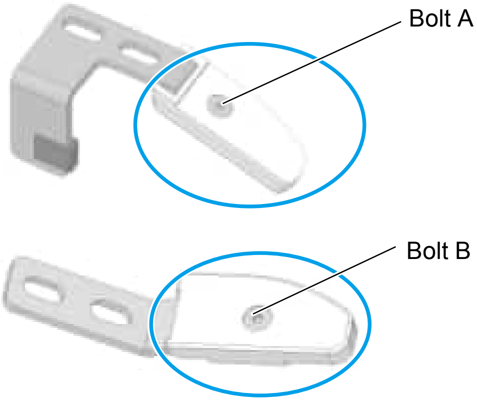
2-1 Mounting the Opener Cam

If the parts indicated in the figure are worn causing a failure or problem, replace the worn part or parts with a new one.

* The tightening torque for bolts A and B is between 1.1 and 1.4 N•m.

CAUTION

Apply locking adhesive to bolts A and B on the opener cam when mounting.

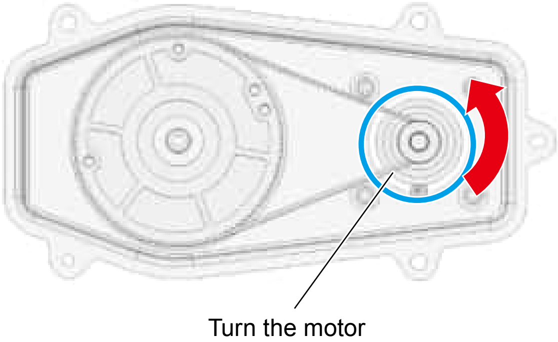


2-2 Tightening the Timing Belt

Turn and adjust the motor.

CAUTION

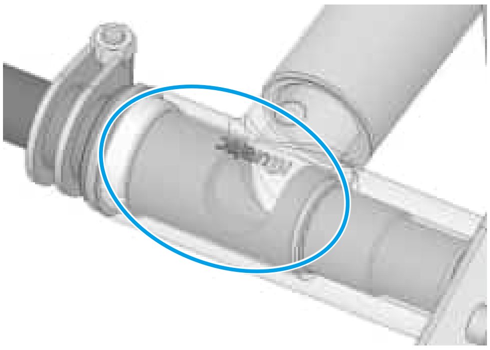
Ensure that the belt is not too slack or too taut. (Recommended tension: 30.2 – 40.6 N)
Malfunctions could occur if the tension is out of the recommended range.



2-3 Shaft & Boss Cleaning

If any cotton fly is clogging the shaft or boss, it can obstruct operation.
Raise the pipe so it is horizontal while the unit operation switch is pulled. If the pipe does not lower when a 600 g weight is hung from the clamp assembly, then disassemble and clean.

Frequency	Guideline
Every 6 months	Remove any cotton fly that is clogged (Only winding units noted above)

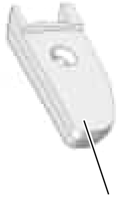


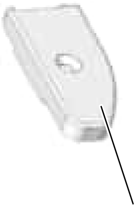
CAUTION

Set the sheet (felt) when cleaning so that it does not break apart.

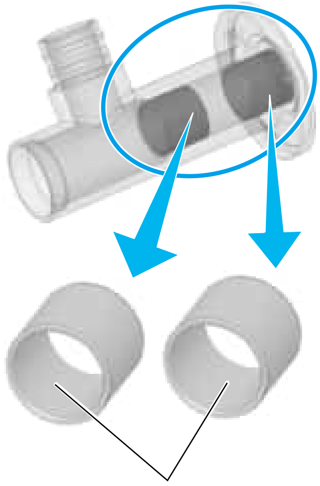
Sec 3 Consumables

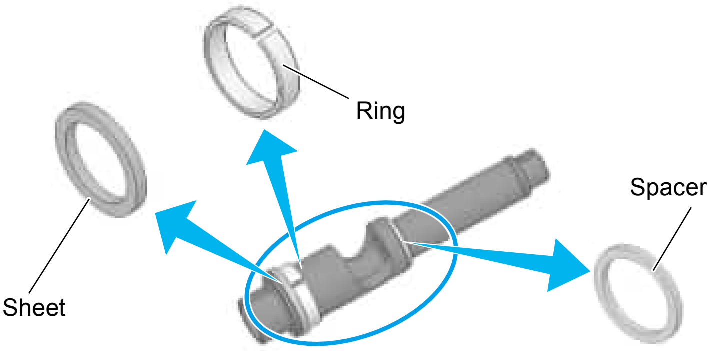
If the parts below are worn causing a failure or problem, replace the worn part or parts with a new one.

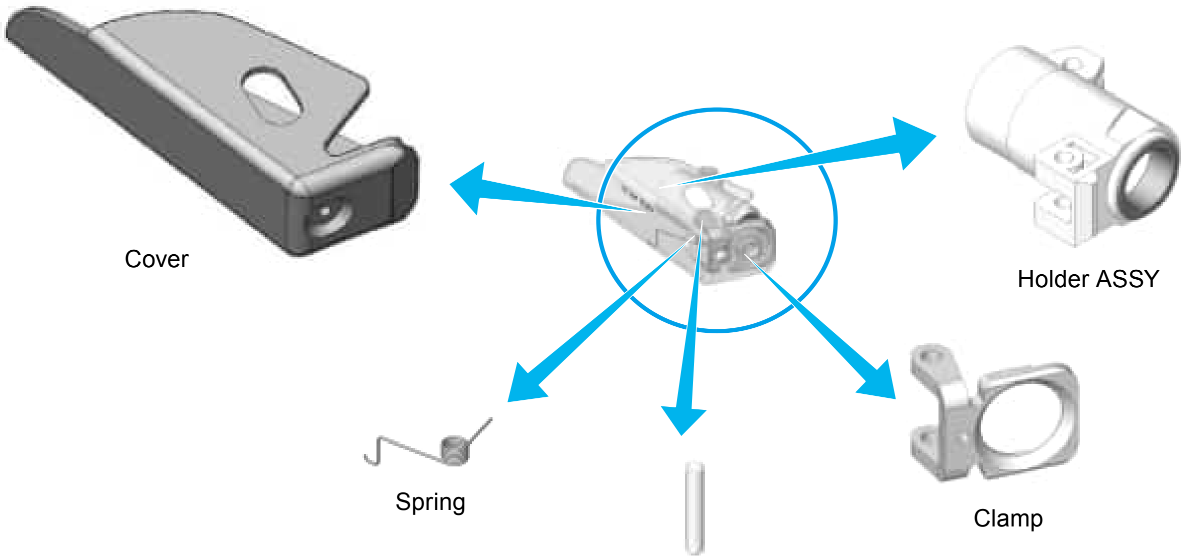

Upper opener cam


Lower opener cam

Timing belt

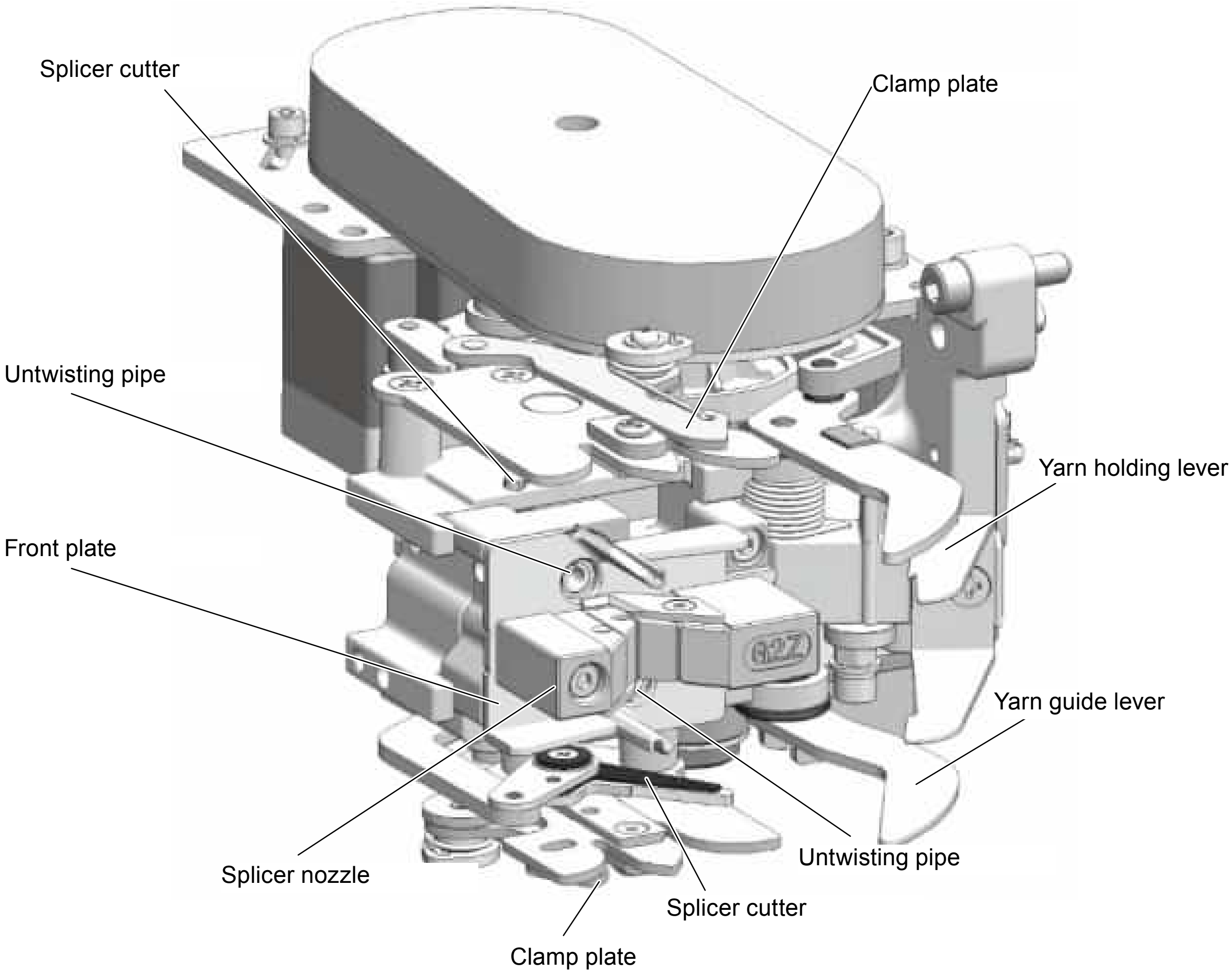



Ring
Spacer
Sheet


Cover
Holder ASSY
Spring
Shaft
Clamp

Mach Splicer
Air Splicer

Names of Each Part


Splicer cutter
Clamp plate
Untwisting pipe
Yarn holding lever
Front plate
Yarn guide lever
Untwisting pipe
Splicer nozzle
Splicer cutter
Clamp plate

Sec 1 Adjustment Standard

1-1 Compressed Air

Make the following air pressure adjustments for the untwisting (P1 pipe) and the splicing (P2 pipe).

P1 pipe	0.65 MPa (Fixed)
P2 pipe	0.3 to 0.65 MPa (The P2 pipe air pressure varies depending on the yarn count and type)

- **Adjustment guideline for the P2 pipe air pressure**

- If the yarn breaks from the blasting operation due to high air pressure, lower the air pressure for splicing.
- If the splice strength is inadequate (loose), raise the air pressure.
- If the splice strength is inadequate (breaks or too thin), lower the air pressure.

* When lowering the air pressure, lower it to below the target value, then set the value so that it increases.

* Refer to Chapter 2 for details on the air pressure adjustment method.

CAUTION

> After adjustment, ensure that the splicing strength and yarn appearance are appropriate.

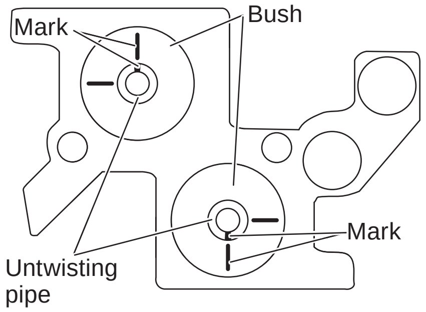
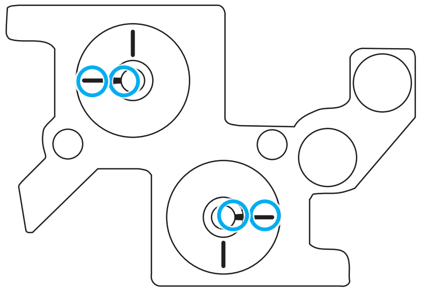
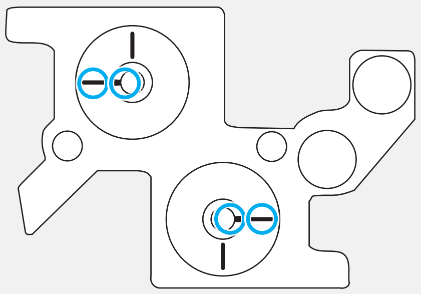
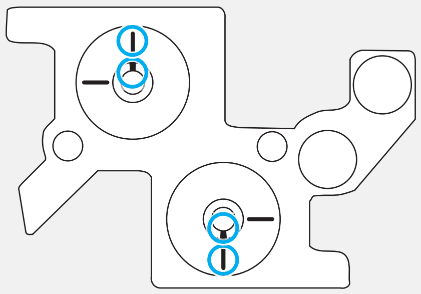
1-2 Untwisting Pipe

To obtain good splices, adjust the untwisting pipe to optimize the untwisting performance. If the untwisting performance is inadequate, the splice strength or elongation retention rates will be reduced.
If the S-twist or Z-twist has changed, make the necessary adjustments as well.

Untwisted Pipe Setting & Press Marks

There are two press marks on the bushing side and one on the untwisting pipe side. Match the settings with the untwisting direction of the yarn, and align the untwisting pipe mark with the bushing mark, as illustrated in the diagram below.

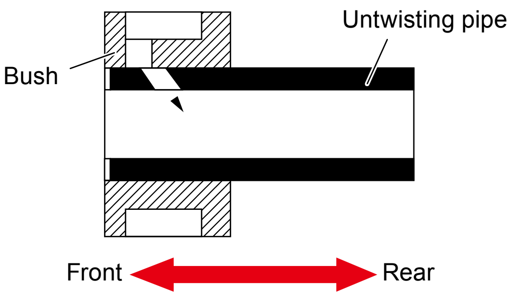
* The position of the mark varies depending on the type of untwisting pipe: pipe for standard yarn or special untwisting pipe (with a colored end).

	For Z-twist yarns	For S-twist yarns
Untwisting pipe for normal yarns		
Special untwisting pipe (with colored end)		

Untwisting Performance Adjustment

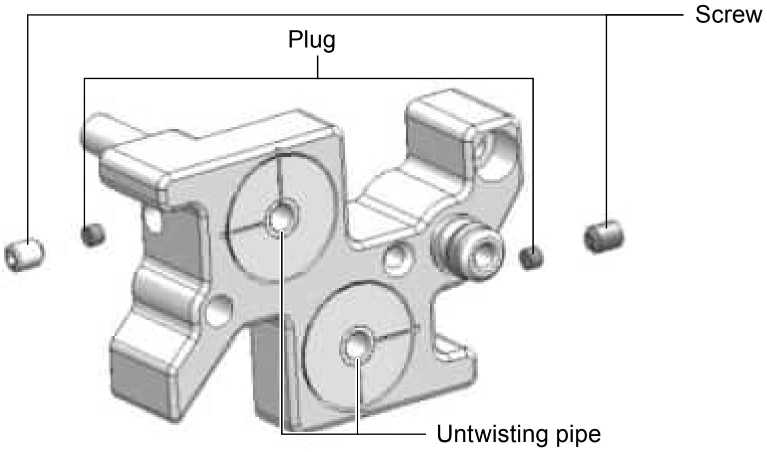
Adjust by moving the untwisting pipe forward or backward using the adjustment gauge. (Adjustments must be made in increments of 0.1 mm)

- If the section to be untwisted is long and the ends are tangled and too fine, adjust and move it inward.
- If the section to be untwisted is short, adjust and move it outward.



CAUTION

The untwisting pipe is fixed in place by inserting the plug first and then screwing in the screw as shown in the diagram below. Loosen the screw prior to making the untwisting pipe adjustment.

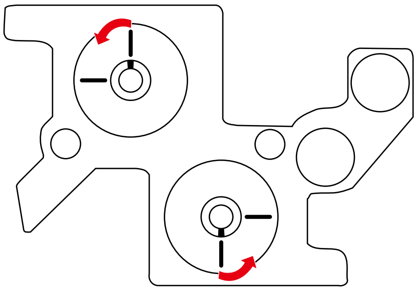
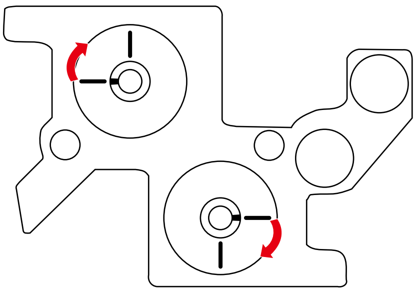
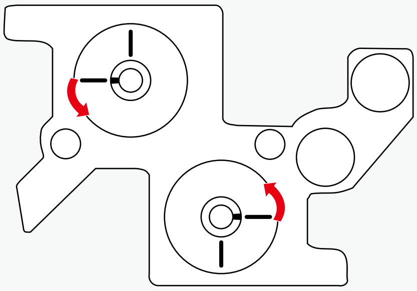
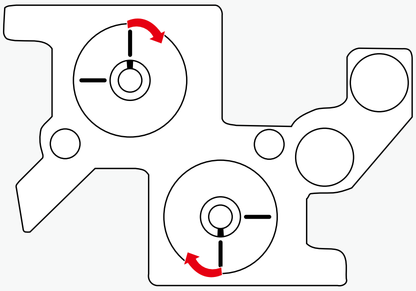


Since the untwisting pipe is ceramic, over-tightening the fixing screw may cause the pipe to fracture or break. As a general guideline, the tightening torque for the fixing screws is between 0.2 and 0.3 N•m.

When the “Untwisting Performance Adjustment” is Inadequate

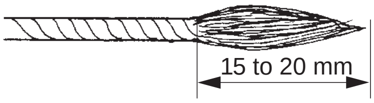
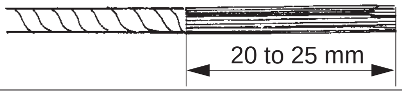
For both the S-twist and Z-twist yarns, the more the yarn is twisted, the more the untwisting pipe should be turned. The forward or rear position of the untwisting pipe must also be re-adjusted. The adjustments are made in increments of 3°.

[Untwisting pipe setting and turning direction]

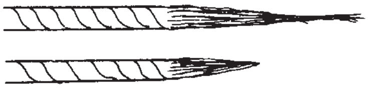
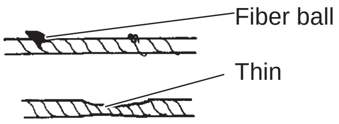
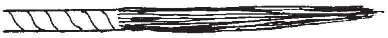
	For Z-twist yarns [Counterclockwise]	For S-twist yarns [Clockwise]
Untwisting pipe for normal yarns		
Special untwisting pipe		

Condition of the Untwisted Yarn

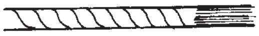
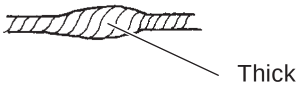
- **Normal**

Short fibers (51 mm or less)  	Brush tip form	Splice has satisfactory appearance and strength
Long fibers (over 51 mm)  	Loose fibers in parallel (moderate bulkiness)	

- **When the untwisting pipe is set forward from the normal position or is over-twisted**

Short fibers 	- No bulkiness - Blown fibers are tangled at end - Fibers are overblown	Large dispersion of strength 
Long fibers 	- No bulkiness - Some of the fibers are tangled	Large dispersion of strength

- **When the untwisting pipe is set backward from the normal position**

Short fibers and long fibers 	Untwisted part is short	Low strength due to pull-out 

1-3 Yarn Holding Lever

Yarn Holding Lever Setting

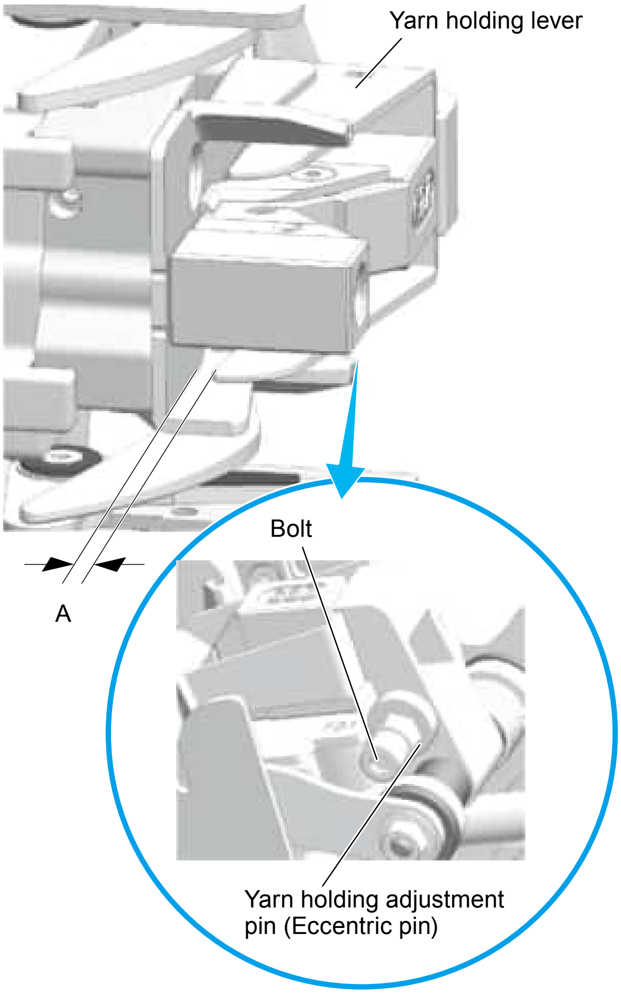
1. **Stop the splicer at the stage illustrated in the diagram on the right using the unit check mode.**

   * Refer to Chapter 3 for details on the check mode.

2. **Turn the yarn holding pin (eccentric pin) to adjust the distance ("A" shown in diagram on right) between the end of the yarn holding lever on the bottom side and the front plate.**

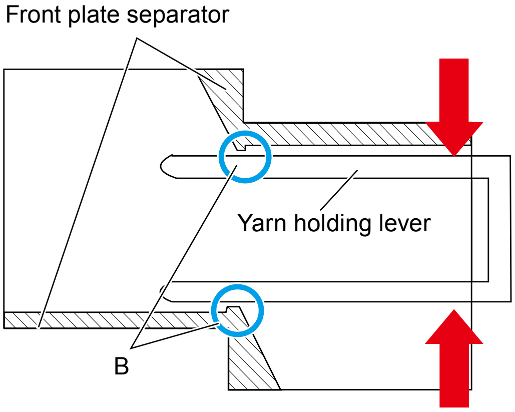
   [Adjustment range]

Yarn holding lever	Adjustment dimension [A] (mm)
J2	1.5 to 2.5
J1, H	2.0 to 3.0
E, K	5.0 to 6.0


Yarn holding lever
Bolt
A
Yarn holding adjustment pin (Eccentric pin)

Yarn Holding Lever Width

Adjust the width of the yarn holding lever so that it fits in between the front plate separators. Leave about 0.5 mm of clearance so that there is no contact, as shown by the "B" points in the diagram on the right.
The area indicated by the arrows in the diagram is bent and adjusted. Do not bend at the front end.

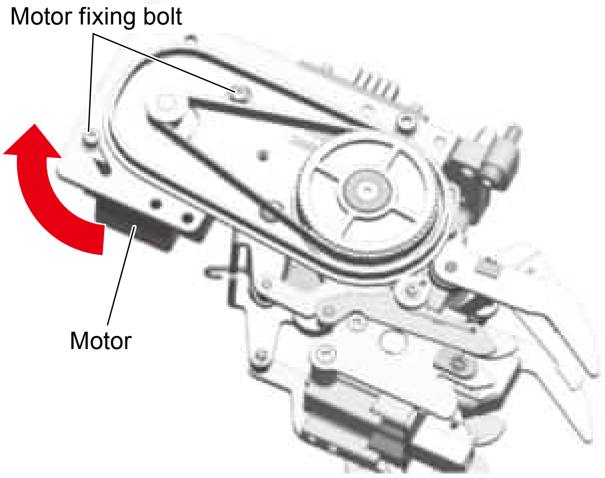

Front plate separator
Yarn holding lever
B

1-4 Tightening the Timing Belt

Turn and adjust the motor.

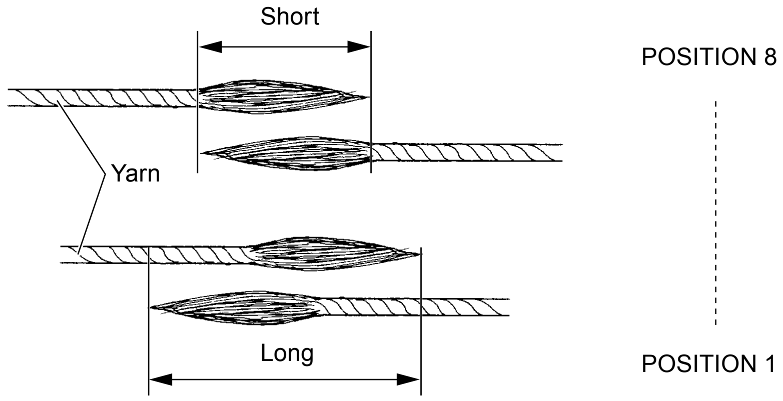
CAUTION

Ensure that the belt is not too slack or too taut. (Recommended tension: 30.2 – 40.6 N)
Malfunctions could occur if the tension is out of the recommended range.



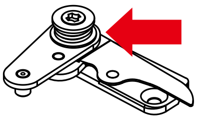
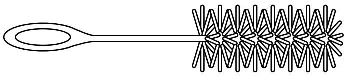
1-5 VOS Settings

The VOS settings are listed below. Change the setting conditions when necessary.

Yarn Joining Device	Select “Air”
Splicer Nozzle Type	Select the splicer nozzle being used
Yarn Type for Splicing	Select the appropriate setting from : STD / SPANDEX / WOOLEN
Splice Length	Adjustment of overlapping splice length **[Adjustment guideline]** Select from Position 1 to 8 - If the splice is too long or too thick, set a position closer to “Position 8” - If the splice is thin or the strength is inadequate, set a position closer to “Position 1” 
Splicer Cutter Type	Select “Standard Cutter" or “Clamp Cutter”
Untwisting Time [A]	Set the compressed air discharge time for untwisting
Splicing Time [C]	Set the compressed air discharge time for splicing

2 Maintenance

2-1 Inspection

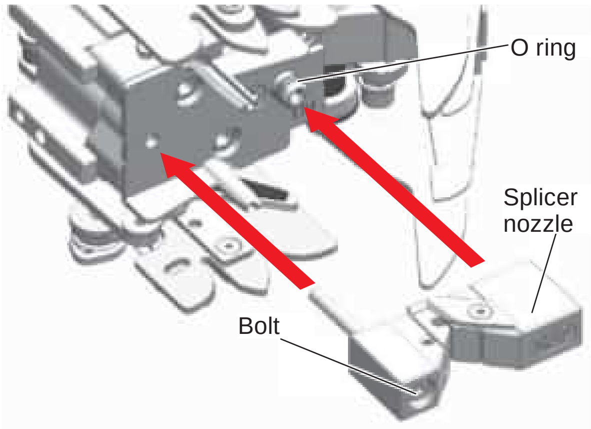
Frequency	Item	Guideline
Daily	Remove cotton fly from the splicer	Clean with air gun
Weekly	Splice check	- Check splice for appearance and strength (Pull gauge) - Check the cutter sharpness (visual check) - Check for any air discharge errors or faults - Check whether or not the air is continuing to discharge or is not discharging at all (visual and sound check, as well as splicing performance check)
When the yarn process is changed	Splice check (P2 pressure, splice length)	Check splice for appearance and strength (Pull gauge)
Every 3 months	Splicer cutter (clamp cutter specs only)	After removing the cotton fly from the cutter, lubricate the axis (blade lubrication not required) * ISO VG10 (Bearing oil) 
Every 6 months	Splicer	Remove the splicer and clean (use Cartridge attaching/ removing wrench) * In particular, remove the cotton fly stuck to the cam surface and the bearings.
Yearly	Remove dirt and stains from inside the untwisting pipe.	Clean with cleaning brush 

2-2 Precaution When Mounting Splicer Nozzle

1. **Fit the splicer nozzle on the pipe with the O-ring, and insert it all the way to the back of the pipe.**

   * If it is difficult to insert, apply grease to the O-ring.

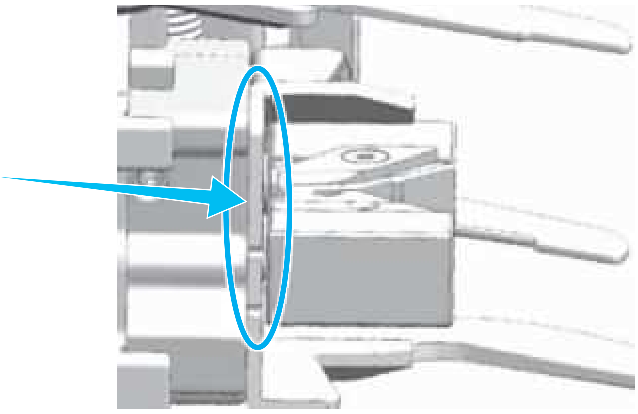
   * Lithium-based grease



2. **Tighten the bolt.**

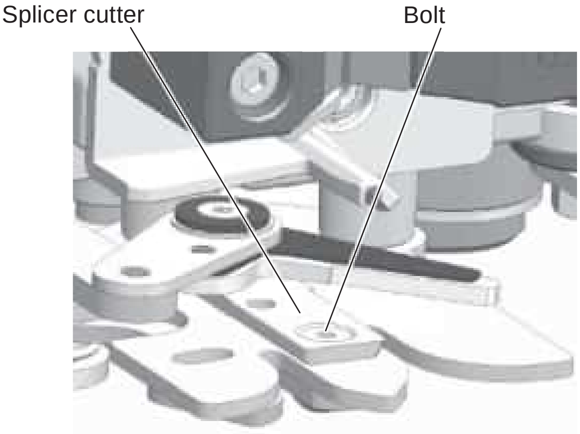
CAUTION

Do not tighten the bolt if the splicer nozzle does not insert all the way to the back of the pipe (when there is a 1 mm gap or greater between the front plate and the splicer nozzle). The ceramic may fracture or break.



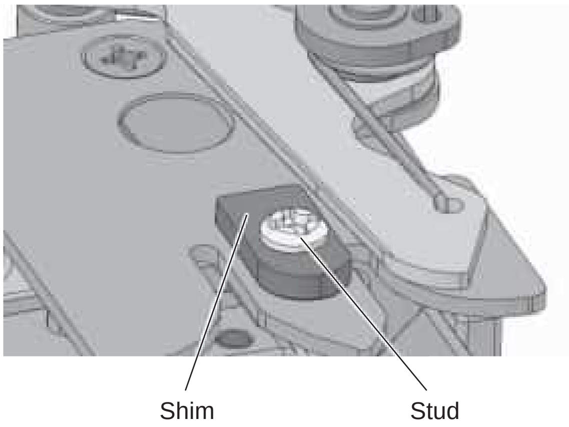
2-3 Precaution When Mounting Splicer Cutter

There are two splicer cutters, an upper and a lower. (Lower shown on the right)



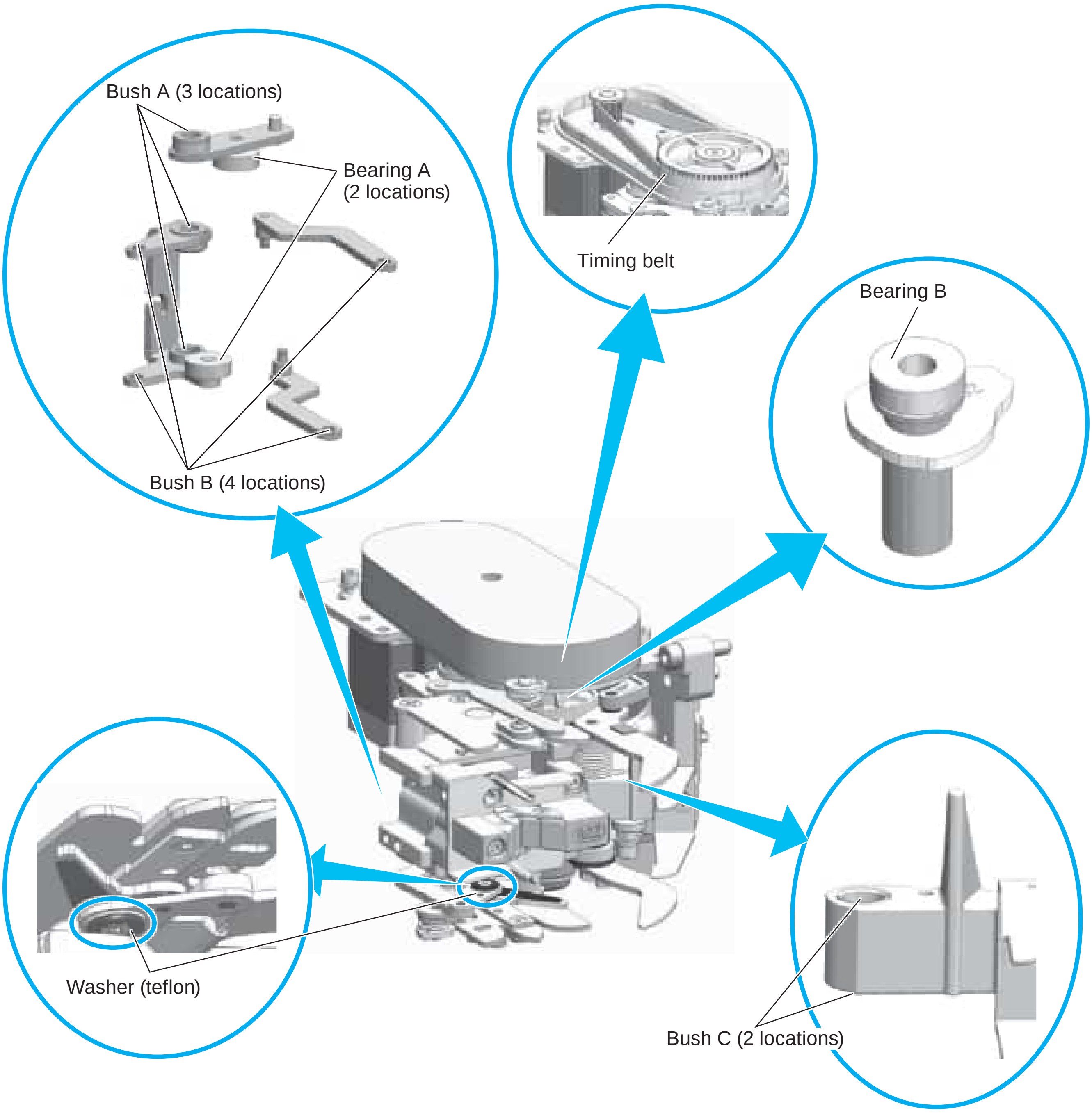
CAUTION

- Apply locking adhesive to the bolt before mounting the splicer cutter.
- Since the splicer cutter is ceramic, over-tightening the fixing bolt may cause the cutter to fracture or break.
  As a general guideline, the tightening torque for the bolt is between 0.2 and 0.3 N•m.
- Wipe off any excess locking adhesive on the attachment side of the shim.
  If you do not do so, the shim may not operate.
- As a general guideline, the tightening torque for the stud is between 0.45 and 0.55 N•m.
- Be sure not to touch the splicer cutter as it can cause injury.



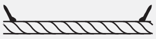
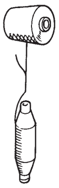
Sec 3 Consumables

If the parts below are worn causing a failure or problem, replace the worn part or parts with a new one.


Bush A (3 locations)
Bearing A
(2 locations)
Bush B (4 locations)
Timing belt
Bearing B
Washer (teflon)
Bush C (2 locations)

Sec 4 Problems When Splicing

4-1 Problems & Countermeasures

Problem	Cause	Countermeasures
Frequent splicing error	The settingi air pressure for Pipe P1 or pipe P2 is not properly	Check the air pressure (Refer to Chapter 4Ha, 1-1)
	Solenoid Valve operation error	Replace the valve
	In the case of short fibers, the yarn holding lever setting is inadequate or the fiber holding lever width is too narrow, resulting in a gap	Re-adjust the yarn holding lever (Refer to Chapter 4Ha, 1-3)
	Poor untwisting	Re-adjust the untwisting lever (Refer to Chapter 4Ha, 1-2)
	Splice length is too short.	Set the splice length closer to “Position 1” (Refer to Chapter 4Ha, 1-5)
Splice is easily pulled out	P2 pressure is too low.	Raise the air pressure
	Splice length is too long	Set the splice length closer to “Position 8” (Refer to Chapter 4Ha, 1-5)
	Poor untwisting	Re-adjust the untwisting lever (Refer to Chapter 4Ha, 1-2)
Splice is either cut and too weak or thin and too weak.	P2 pressure is too high	Lower the air pressure
	Splice length is too short	Set the splice length closer to “Position 1” (Refer to Chapter 4Ha, 1-5)
	Too much untwisting	Re-adjust the untwisting lever (Refer to Chapter 4Ha, 1-2)
Long tail on splice 	Splice length is too long	Set the splice length closer to “Position 8” (Refer to Chapter 4Ha, 1-5)
Yarn is not accepted by splicer nozzle	Yarn is caught by the suction mouth	Check for scratches and yarn waste
Thick splice at one side only, or tailing	Splicer cutter is dull	- Remove cotton fly from the cutter - Replace the cutter
	Insufficient clamping of upper and lower yarns	- Check the clamp operation - Either repair the scratch or damage on the yarn guide lever, or replace it - Wipe and clean any impurities stuck to the yarn guide lever
	Inadequate setting of untwisting pipe on one side	Re-adjust the untwisting lever (Refer to Chapter 4Ha, 1-2)
Double ending of lower yarn 	Length of yarn drawn into re-tie pipe is too short	- Remove any yarn waste - Check the lowering position - Check for scratches or damage on the spinning bobbins - Check the blower static pressure - Check the kink preventer (Refer to Chapter 4Ma)
	Re-tie pipe double picking	- Check the spinning bobbins - Check the re-tie pipe operation

4-2 Notes Relating to Strength Measurement

- **Measure both the “parent yarn” and the “spliced yarn” on the winding unit 10 times each, alternating back and forth, and calculate the minimum strength and the average retention rate.**
- **The spliced yarn shares the same features with its “parent yarn.” So do not measure the “parent yarn” and the “spliced yarn” on different spinning bobbins.**

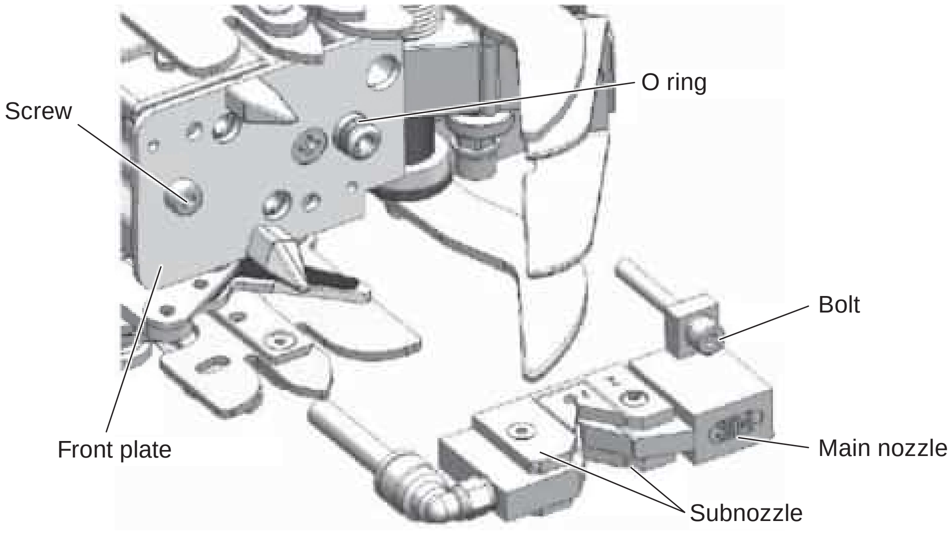
4-3 Retention Rates

Knots made by a knotter tend to cause resistance because they can get caught when the yarn is drawn through in subsequent winding processes. As a result, the knots need to be stronger.
For splicers, however, the strength of the splice can be slightly lower than the strength of the parent yarn, because there are no knots in the splices and they can stretch. As a general guideline, refer to the rates below for the minimum strength required for splices.

Yarn for yarn counts thinner than Ne20'S	50% or more of the average strength of the parent yarn
Yarn for yarn counts thicker than Ne20'S	30% or more of the average strength of the parent yarn

Sec 5 Three-tier Nozzle [Option]

5-1 Names of Each Part & Mounting Method



The splicer nozzle assembly consists of a main nozzle and two supplementary twisting nozzles, forming three-tier.

CAUTION

The main nozzle and the subnozzle have been assembled together with fine adjustment.
Do not disassemble them as doing so could lower performance or cause damage.

* Refer to Chapter 4Ha, 2-2 for details on precaution when mounting splicer nozzle.

5-2 VOS Settings

The VOS settings listed below are added to the lists in Chapter 4Ha, 1-5. Change the compressed air discharge time when necessary.

Twisting Time [C]	Set the compressed air discharge time for the main nozzle
Three-tier Nzzl Spl Tm [E]	Set the compressed air discharge time for the subnozzle

Chapter
4Ia

PC Sensor

Introduction

- **Warning**

The PC sensor is a precision instrument. Failure to follow the guidelines below could result in malfunction or failure.

- Do not disassemble.
- Do not touch the detection axis.
- Handle with care because the PC sensor is extremely fragile and very vulnerable to strong impact.

- **Yarn incompatible with PC sensor**

If the following yarn is used for winding, it may cause damage or faulty detection.
We recommend following the procedure described later to remove the sensor and to perform the winding operation in the tension manager section.

- Dirty yarn contaminated with such contaminants as grease that could significantly smear the detection axis.
- Yarn that could wear down the ceramic guide and the detection axis that make up the yarn path.

Sec 1 Adjustment Standard

1-1 VOS Settings

The VOS settings are listed below. Change the setting conditions when necessary.

PC Sensor	Select "Without" or "With"
Tension Control System	Select from: Tension Mgr / Tension Fdbk / Fix Appld Tnsn

* If the PC sensor is turned OFF, the tension feedback cannot be selected.

Sec 2 Maintenance

2-1 Cleaning

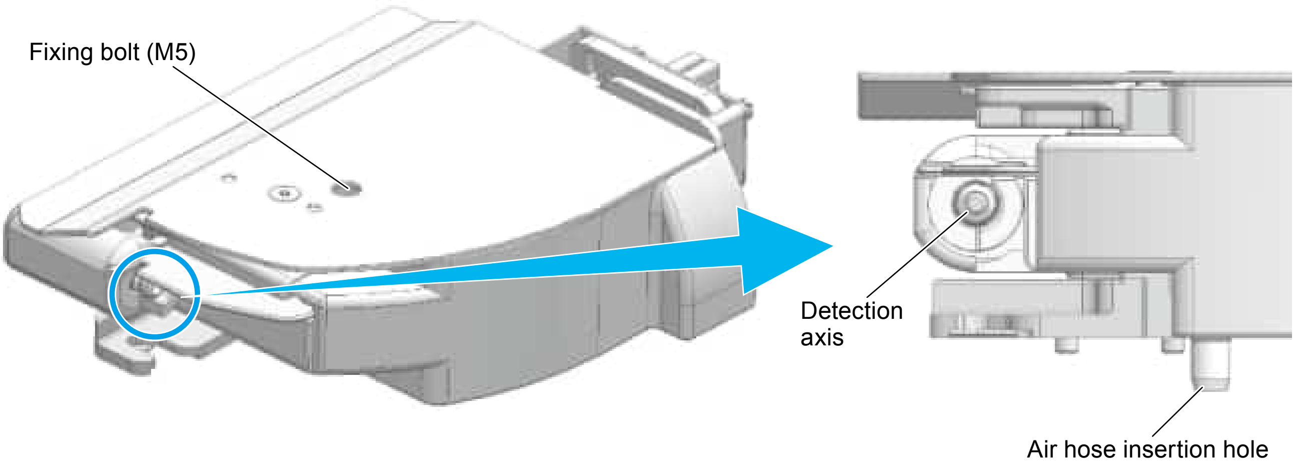
If any cotton fly or waste is stuck to the detection axis or yarn guide, remove it gently using a cloth or cotton swab moistened with water, or water diluted with mild detergent.

CAUTION

Do not apply too much pressure on the detection axis when cleaning.
Do not use alcohol based agents (thinner, benzine, etc.).

2-2 Damage & Failure

If part of the PC sensor is damaged or has failed, replace the entire PC sensor unit.



Removing & Attaching the PC Sensor

1. **Remove the PC tensor from the winding unit while the PC sensor is attached.**
2. **After removing the (M5) bolt shown above and the air hose, remove the PC sensor from the PC tensor.**

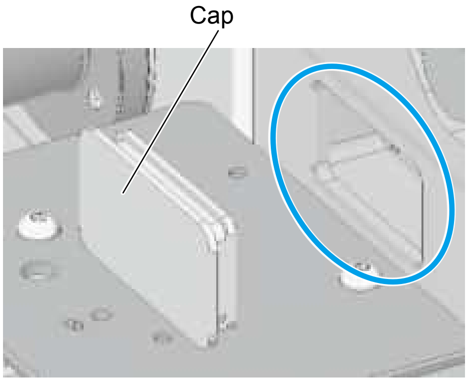
* To attach the PC sensor, perform the removal procedure in reverse order.

CAUTION

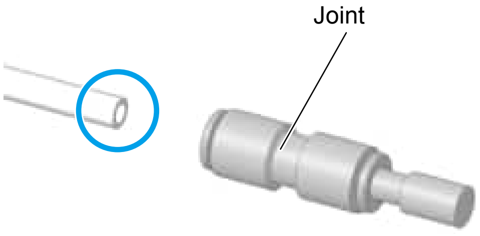
Attaching and removing the PC sensor while PC tensor is attached to the winding unit may cause the air hose insertion hole to break.

When Using the Winding Unit without the PC Sensor Attached

Cover the 2 places indicated below with the special parts provided.



Sensor connection for the casing



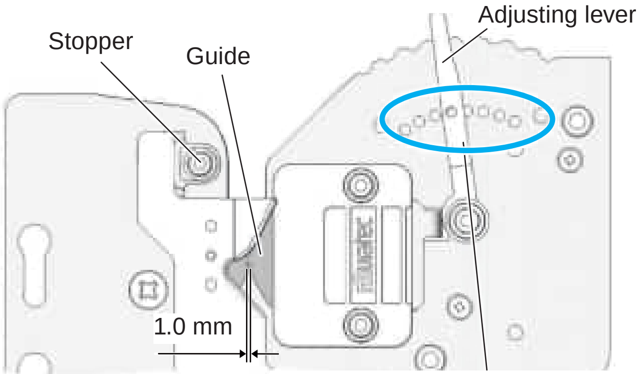
Air pipe connected to the PC sensor

PC Tensor (Gate)

Sec 1 Adjustment Standard

1-1 Preclearer Adjustment Method

The preclearer gap can be adjusted using the position of the adjustment lever on the tensor box and following the scale.


Adjusting lever
Stopper
Guide
1.0 mm
In order from the left: 0.4, 0.6, 0.8, 1.0, 1.2, 1.4, 1.6 and 1.8

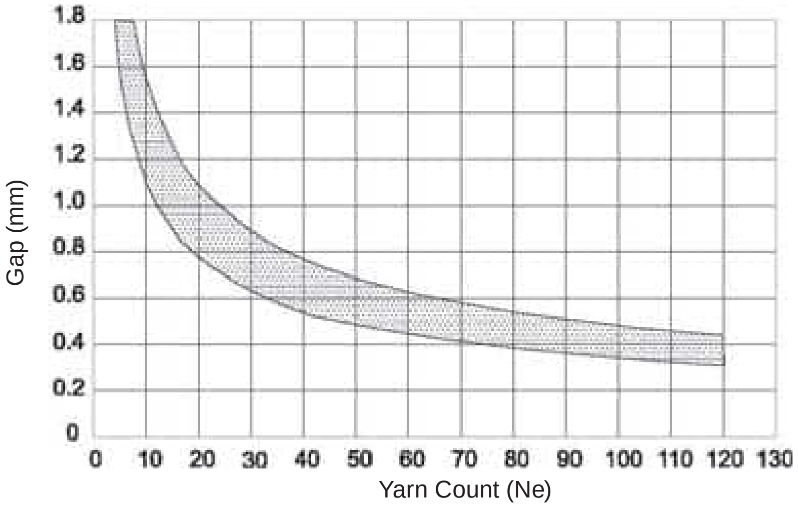
Adjustment Range

0.4 to 1.8 mm (1 pitch = 0.2 mm)

* Set to the desired gap depending on the yarn count of the lot.

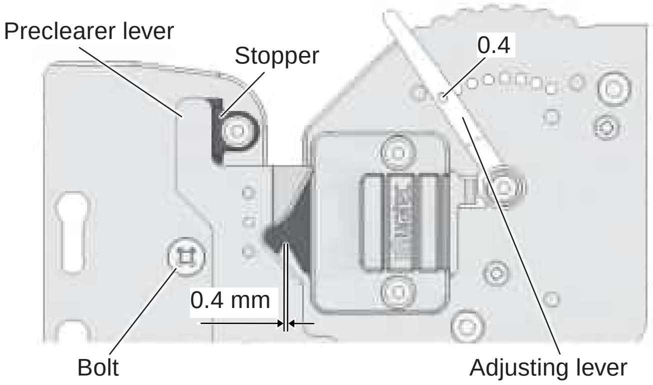
Preclearer Setting Guideline

The preclearer gap should be set so that it matches each yarn count when winding the yarn and the value should fall into the dotted section on the graph.



1-2 Assembly Method

When Removing or Replacing the Stopper


Preclearer lever
Stopper
0.4
0.4 mm
Bolt
Adjusting lever

1. **Loosen the stopper bolt and set the adjustment lever position to 0.4.**
2. **Close the preclearer lever and hold the 0.4 mm pin and gauge, etc., in place.**
3. **Fix the stopper bolt in place when the stopper touches the preclearer lever.**
4. **Return the adjustment lever back to the original position**

1-3 VOS Settings

The VOS settings are listed below. Change the setting conditions when necessary.

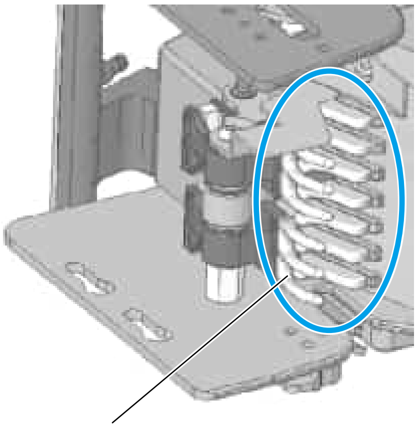
Tensor	Select “Gate”

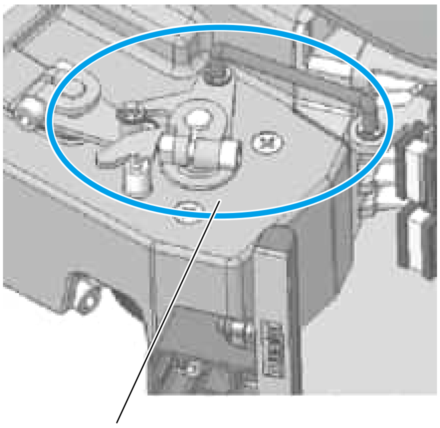
Sec 2 Maintenance

2-1 Gate & Lever Cleaning

If there is any yarn waste or cotton fly buildup around the gate or lever, for example, the appropriate tension may not be possible or the opening and closing operations may not work.

Frequency	Item	Guideline
Weekly	Gate surroundings	Remove of cotton fly and yarn waste buildup around gate section
	Lever surroundings	Remove of cotton fly and yarn waste buildup around lever section

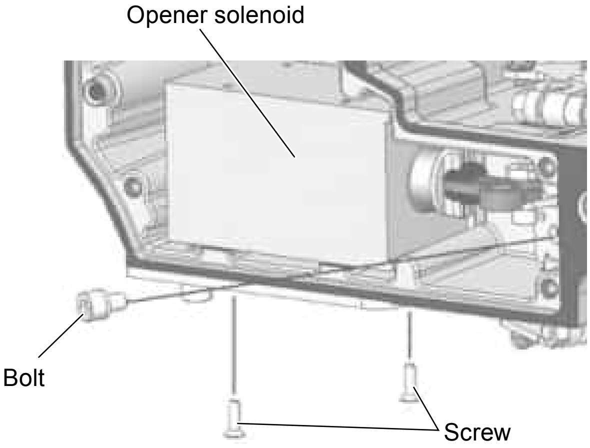

Gate surroundings


Lever surroundings

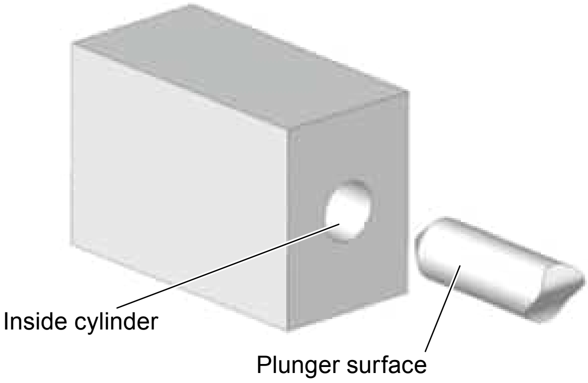
2-2 Opener Solenoid Cleaning

Clean the opener solenoid if EF alarm is displayed on the unit's indicator and the gate does not open up sufficiently, except in cases when there is yarn or cotton fly entanglement, or parts corrosion.

1. **First remove one bolt and then the two screws.**

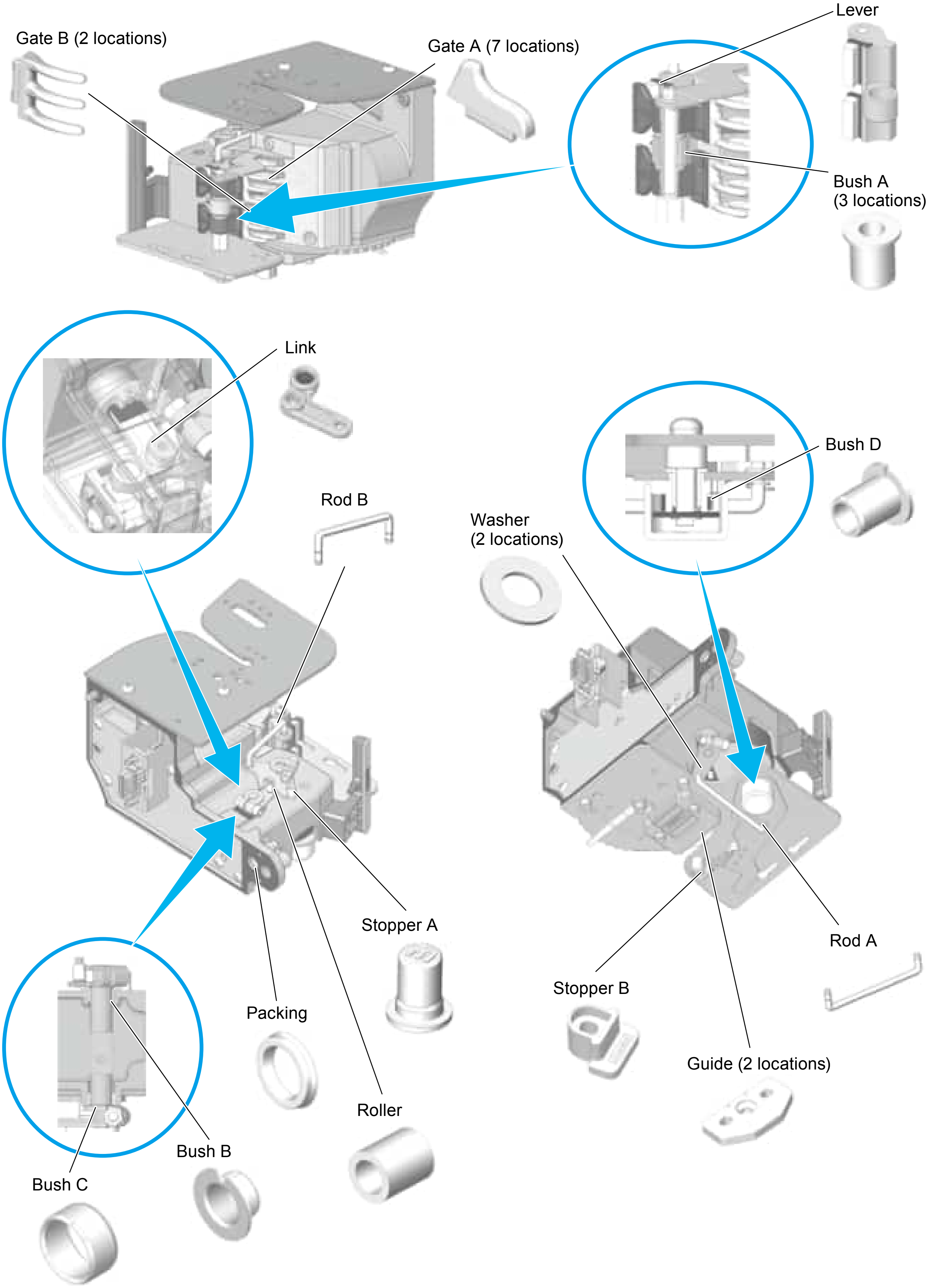

Opener solenoid
Bolt
Screw

2. **Remove the opener solenoid, and clean the inside of the cylinder and the plunger surface.**


Inside cylinder
Plunger surface

Sec 3 Consumables

If the parts below are worn causing a failure or problem, replace the worn part or parts with a new one.


Gate B (2 locations)
Gate A (7 locations)
Lever
Bush A
(3 locations)
Link
Rod B
Washer
(2 locations)
Bush D
Stopper A
Packing
Roller
Bush B
Bush C
Stopper B
Rod A
Guide (2 locations)

Chapter 4Lb PC Bal-Con (Tray)

Introduction

Make adjustments from the left following the order of the arrows. The adjustment procedures are noted in the adjustment standards for each chapter.

Item to be adjusted / When adjustment is necessary	1-1 Bal-Con height →	1-2 Bobbin holder position →	1-3 Bobbin angle and right/left position →	1-4 Movable Bal-Con stop position →	1-5 Bobbin forward/rear position
When replacing a winding unit	○	○	○	○	○
When performing a lot change (When the Bal-Con and ejector are not removed)	○	○	---	○	○
When removing the only Bal-Con	○	---			
When removing the only ejector	---	○	○	---	
*Reference chapter in instruction manual	Chapter 4Lb	Chapter 4Pa	Chapter 4Pa	Chapter 4Lb	Chapter 4Lb

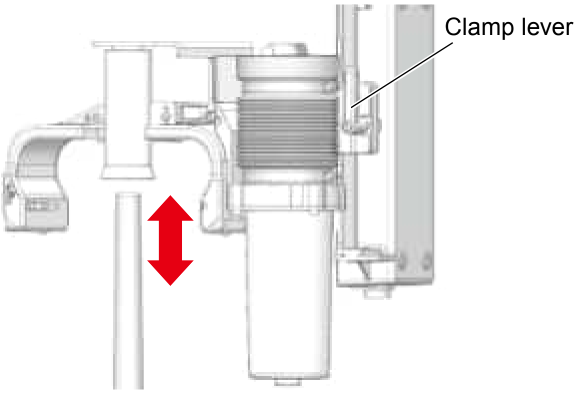
CAUTION

If the Bal-Con sensor position is changed, the forward or rear position of the bobbin will change relative to the movable Bal-Con.
Set the movable Bal-Con stop position on the VOS.

Sec 1 Adjustment Standard

1-1 Bal-Con Height

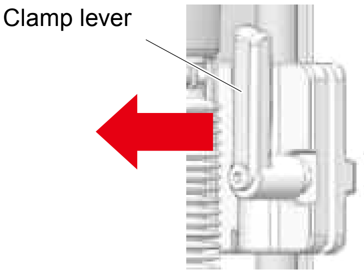
Adjust the height of the Bal-Con using the clamp lever on the right hand side.



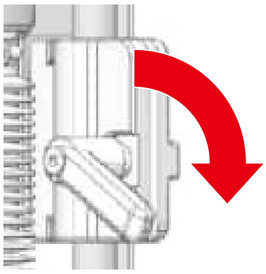
How to Use the Clamp Lever

Pulling the lever towards you only unlocks the lever.

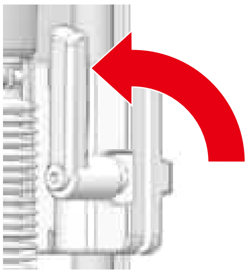
- **When the clamp lever is loose**



1. Pull the lever towards you.



2. Once the lever is pulled towards you, turn it to the right.



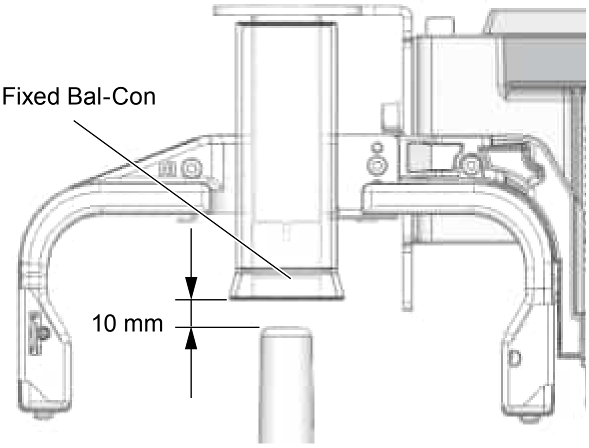
3. Push the lever towards the back, and turn it to the left to loosen.

* To tighten the clamp lever, follow the loosening procedure but in reverse order.

* After adjusting the Bal-Con height, set the clamp lever in an upward direction so that it does not interfere with the adjacent winding unit.

Bal-Con Height Adjustment Position

Adjust the distance between the forward end of the bobbin head and the bottom end of the fixed Bal-Con to 10 mm.



1-2 Bobbin holder position

Refer to Chapter 4Pa.

1-3 Bobbin angle and right / left position

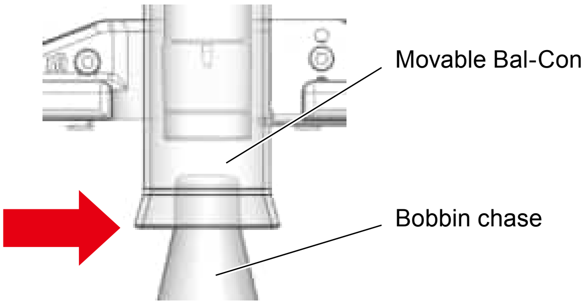
Refer to Chapter 4Pa.

1-4 Movable Bal-Con Position

The stop position for the movable Bal-Con can be adjusted using the “Movable Bal-Con Stop Position” settings in VOS. (Refer to Chapter 3)

1. **Set to “Bal-Con Operation Check” on the VOS maintenance screen. (Refer to Chapter 3)**

2. **Use the unit operation buttons to ensure that the movable Bal-Con stop position meets the top of the bobbin chase.**



Movable Bal-Con stop position

3. **If the stop position does not meet the top of the bobbin chase, select “Up” or “Low” in the “Movable Bal-Con Stop Position” settings in VOS. Then, adjust it accordingly so that the bottom of the movable Bal-Con meets the top of the bobbin chase.**

CAUTION

The stop position for the movable Bal-Con may vary depending on the winding unit.

1-5 Bobbin forward/rear position

After adjusting the movable Bal-Con stop position, adjust the forward or rear position of the bobbin.

CAUTION

When adjusting the forward or rear position of the bobbin, ensure that the following position adjustments have been completed: Bal-Con height, bobbin holder position, bobbin angle and right / left position, and movable Bal-Con stop position. When checking, change the bobbin and use an empty one.

1. **Set to “Bal-Con Operation Check” on the VOS maintenance screen. (Refer to Chapter 3)**
2. **After performing the centering operation using the unit operation buttons, set the Bal-Con to the bottom position.**

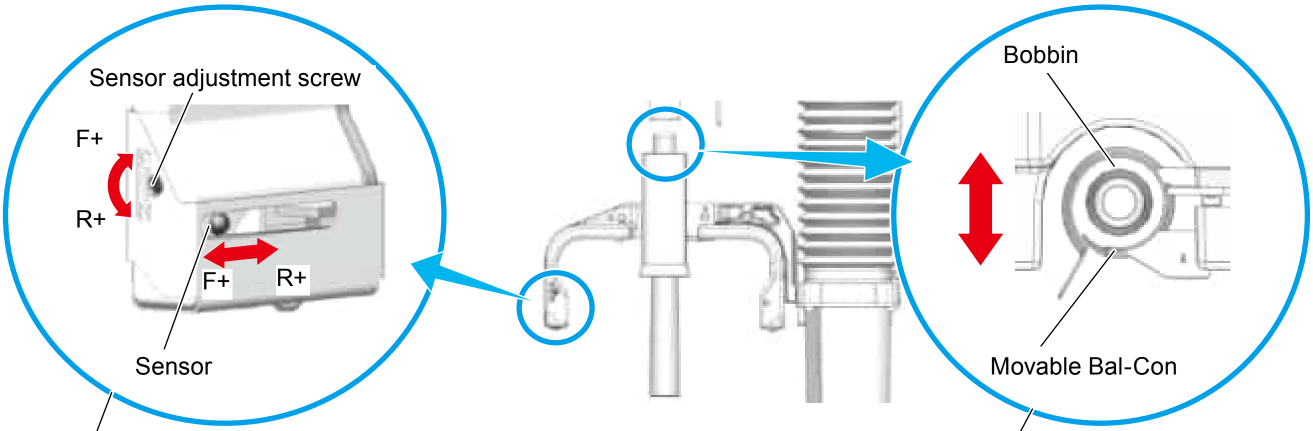
   * If the Bal-Con does not lower to the bottom position, re-adjust the bobbin angle on the ejector. (Refer to Chapter 4Pa)
3. **Ensure that the bobbin and the movable Bal-Con center are aligned.**

Bobbin forward misalignment	Adjust the sensor towards the rear (R+)
Bobbin rear misalignment	Adjust the sensor towards you or forward (F+)

4. **After adjusting the sensor, check again to ensure that the bobbin and the movable Bal-Con center are aligned.**

   * Repeat until the bobbin and the movable Bal-Con center are aligned.

   * When setting the Bal-Con to the bottom position, ensure that the sensor is turned OFF.



If the sensor position is changed, the forward or rear position of the bobbin will change relative to the movable Bal-Con.

Adjust the bobbin forward or backwards so that it is in the center of the movable Bal-Con.

1-6 VOS Settings

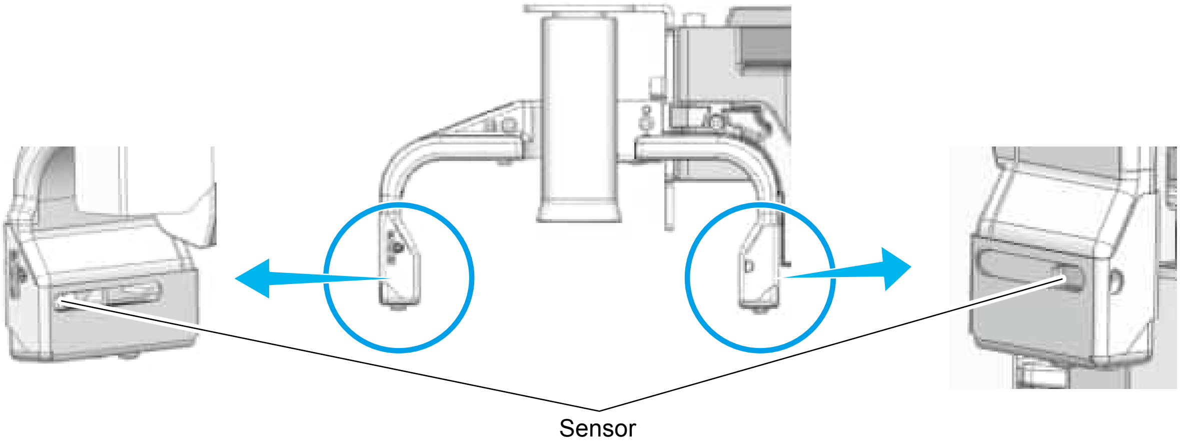
The VOS settings are listed below. Change the setting conditions when necessary.

Bal-Con Action	Select “ON”
Movable Bal-Con Stop Pos.	Select from: STD±0 / UP 1 to 5 / DOWN1 to 2
Bobbin Length	Set the bobbin length
Bal-Con Operation Check	Select “Yes” or “No”

Sec 2 Maintenance

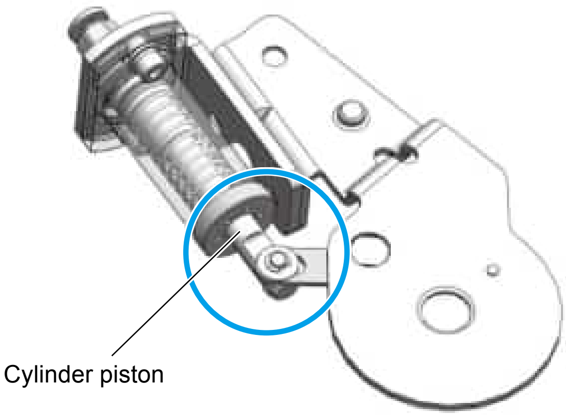
2-1 Sensor Cleaning

If cotton fly or waste is stuck to the sensor, the Bal-Con may not operate correctly.
Remove all cotton fly around the sensor using an air gun once a month.



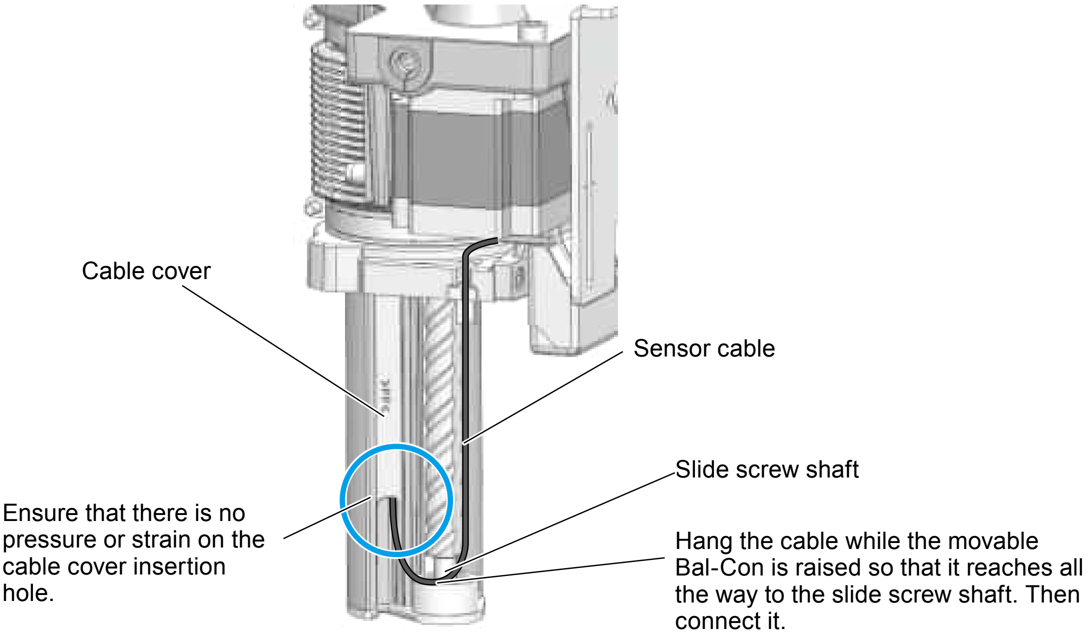
2-2 Eject Cutter Cleaning

Remove any cotton fly around the forward end of the cylinder piston once a month.



2-3 Precautions When Connecting the Sensor Cable

When connecting the sensor cable, hang the cable while the movable Bal-Con is raised so that it reaches all the way to the slide screw shaft. Then connect it.

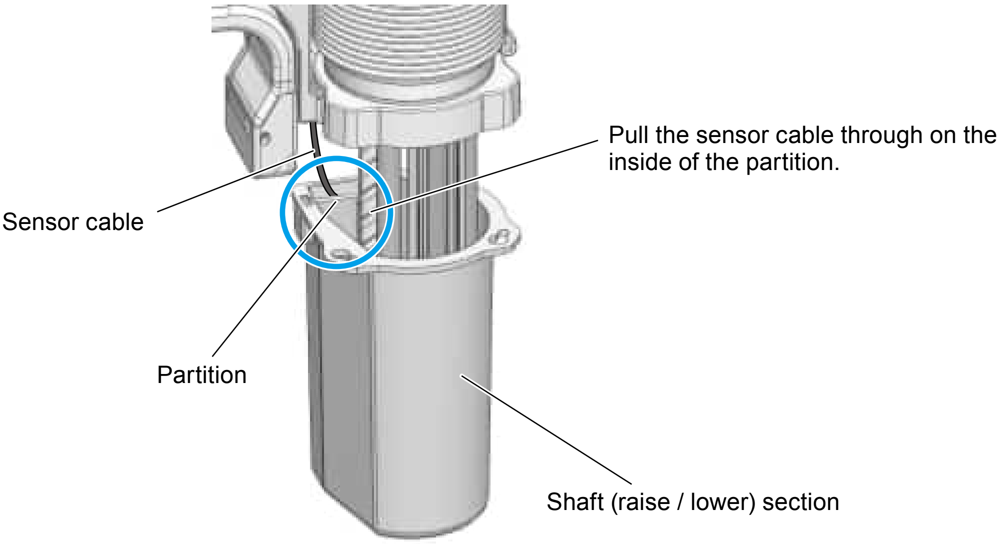

Cable cover
Sensor cable
Slide screw shaft
Ensure that there is no pressure or strain on the cable cover insertion hole.
Hang the cable while the movable Bal-Con is raised so that it reaches all the way to the slide screw shaft. Then connect it.

CAUTION

If there is insufficient slack in the cable length, the cable may disconnect.

2-4 Precautions When Installing the Lower Cover on the Raise/Lower Shaft

When installing the lower cover on the shaft (raise / lower) section, pull the sensor cable through on the inside of the partition.


Pull the sensor cable through on the inside of the partition.
Sensor cable
Partition
Shaft (raise / lower) section

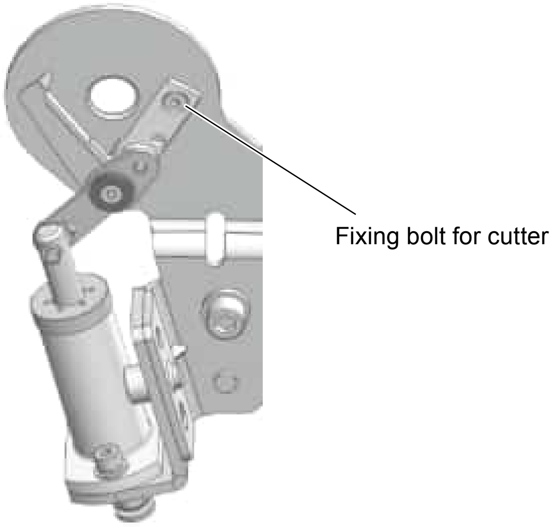
CAUTION

If the cable is not pulled through on the inside of the partition, the cable may disconnect.

2-5 Precautions When Mounting the Eject Cutter

CAUTION

- Apply the locking adhesive to the bolt before mounting the cutter.
  bolt before mounting the cutter. Since the cutter is ceramic, over-tightening the fixing bolt may cause the cutter to fracture or break. (The recommended tightening torque is between 0.2 and 0.3 N•m.)
- Be sure not to touch the magazine cutter as it can cause injury.



2-6 Inspection & Lubrication

Frequency	Item	Guideline
Every 6 months	Guide shaft, Slide screw	Apply grease to the guide shaft and slide screw * Extreme-pressure lithium-based grease with mineral oil, NLGI No.2
Yearly	Guide shaft	Apply grease to the section that supports the guide shaft. * Extreme-pressure lithium-based grease with mineral oil and molybdenum disulfide (wet type)
	Eject cutter, Cylinder	- Disassemble the cylinder and lubricate the inside of it - Use a maintenance tool and lubricate the packing parts * Extreme-pressure lithium-based grease with mineral oil, NLGI No.2

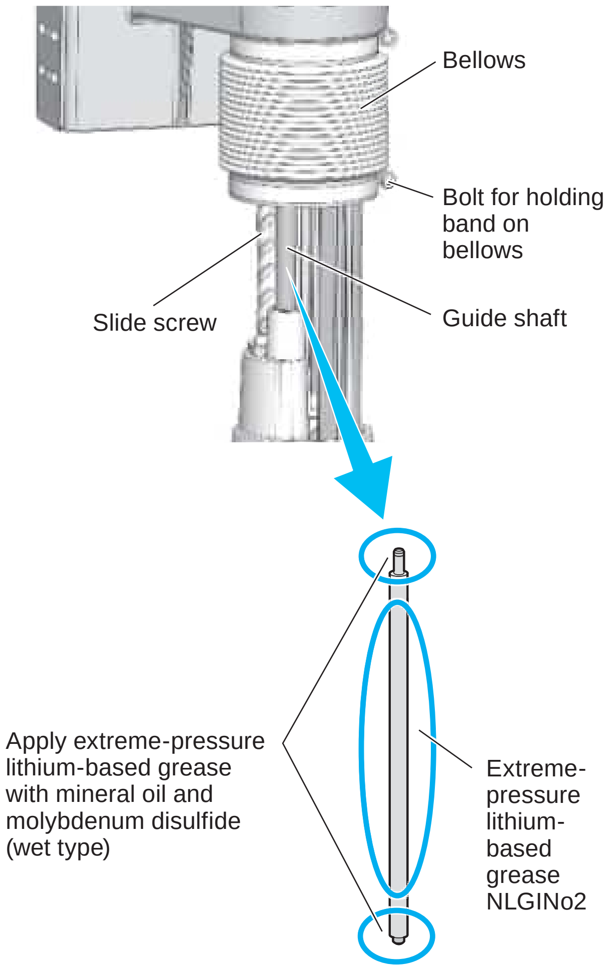
Bal-Con

1. **Pull the unit operation switch.**
   Unit operation will stop.
2. **Loosen the bolt that holds the fixing band onto the lower part of the bellows. Then, manually lower the Bal-Con.**
3. **Lift up the bellows, and apply grease (0.5 mL) to the guide shaft and the slide screw.**
4. **Spread the grease evenly by raising and lowering the Bal-Con manually 2 to 3 times.**

CAUTION

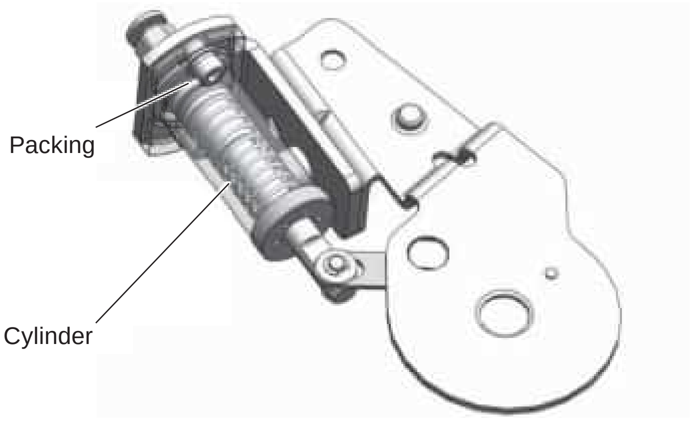
When old grease congeals, it increases the resistance on the sliding screw and nut, causing the mechanism to wear at a faster rate. Therefore, clean and remove old grease.

5. **Apply grease to the section that supports the guide shaft.**

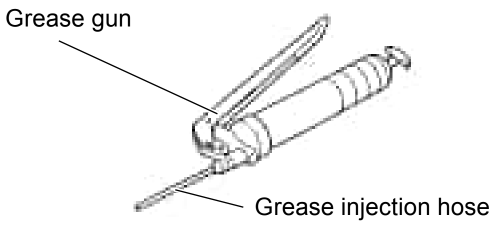

Bellows
Bolt for holding band on bellows
Slide screw
Guide shaft
Apply extreme-pressure lithium-based grease with mineral oil and molybdenum disulfide (wet type)
Extreme-pressure lithium-based grease NLGINo2

Eject Cutter

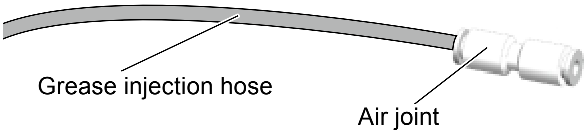
Lubricate using a cylinder maintenance tool. For the details, refer to Chapter 4Lb, 2-7.


Packing
Cylinder

2-7 Grease Injection into Cutter Cylinder


Grease gun
Grease injection hose

1. **Using the grease gun provided, inject enough grease so that it fills up the front end of the grease injection hose (length 12 cm).**

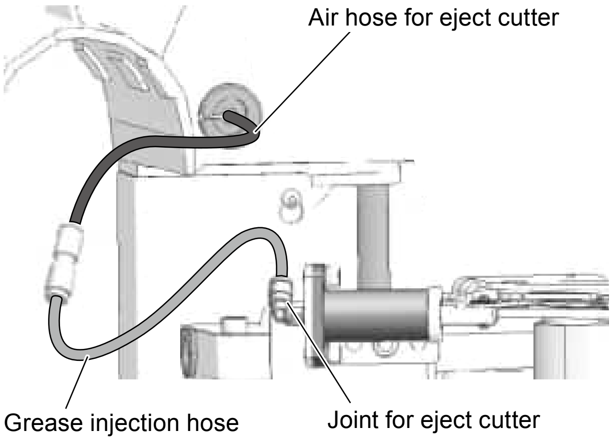

Grease injection hose
Air joint

2. **Connect the grease filled hose to the air joint provided.**

3. **Pull off the eject cutter air hose, attach the air joint from step 2, and insert the opposite end of the grease injection hose onto the joint for the eject cutter.**

   * If you remove the tensor box, it makes this lubrication task easier to perform.

4. **Turn on the air using the output check mode for the eject cutter, and inject the grease. (Refer to Chapter 3 for further details on the check mode.)**

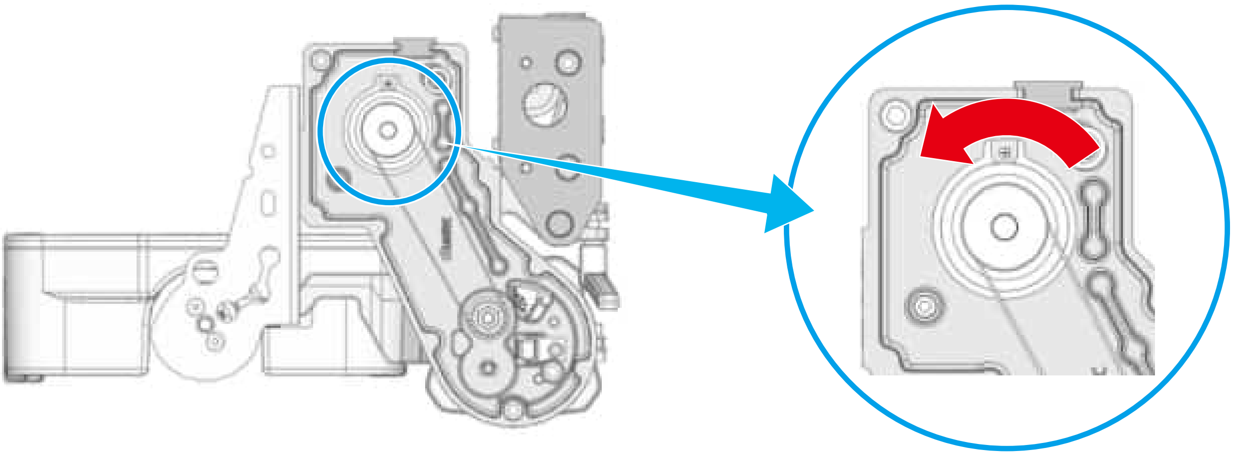

Air hose for eject cutter
Grease injection hose
Joint for eject cutter

2-8 Tightening the Timing Belt

Turn and adjust the motor.

CAUTION

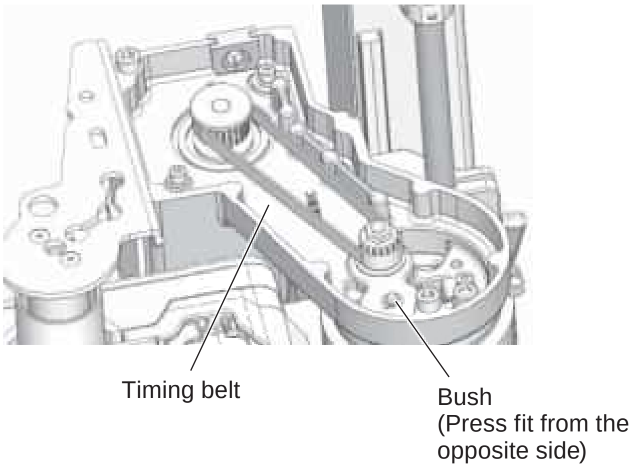
Ensure that the belt is not too slack or too taut. (Recommended tension: 30.2 – 40.6 N)
Malfunctions could occur if the tension is out of the recommended range.

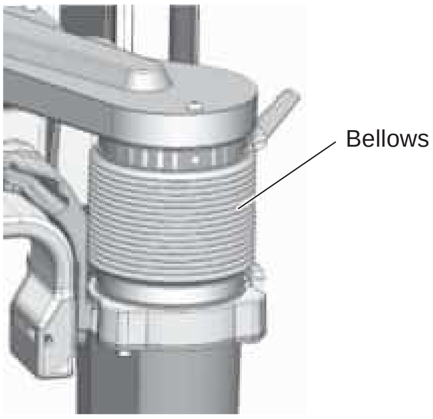


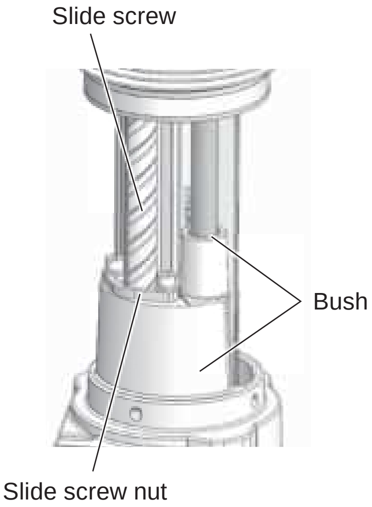
Sec 3 Consumables

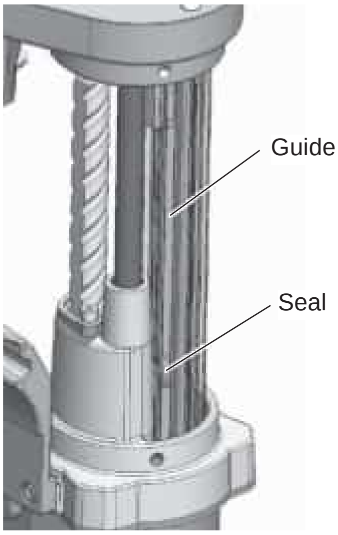
If the parts below are worn causing a failure or problem, replace the worn part or parts with a new one.

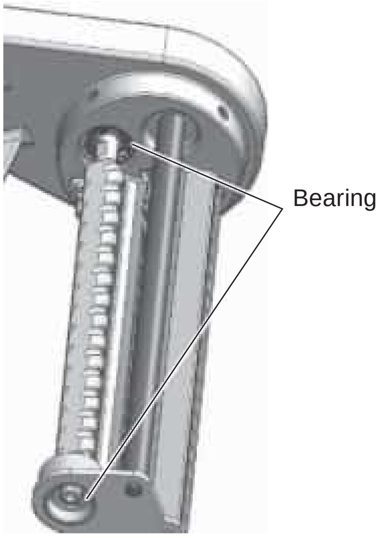
Bal-Con


Timing belt
Bush
(Press fit from the opposite side)

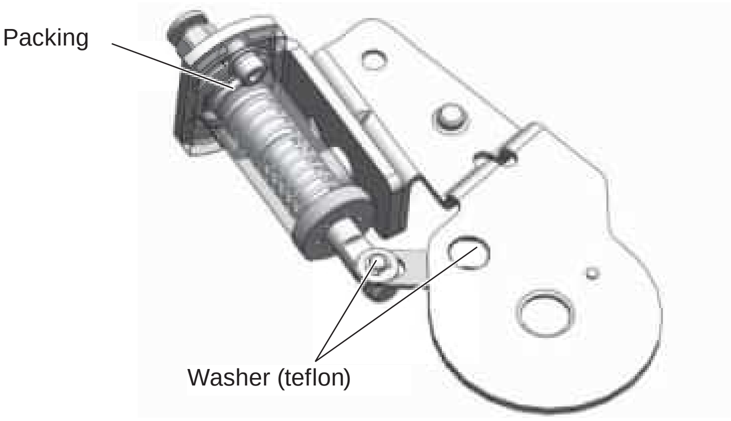



Slide screw
Bush
Slide screw nut





Eject Cutter


Packing
Washer (teflon)

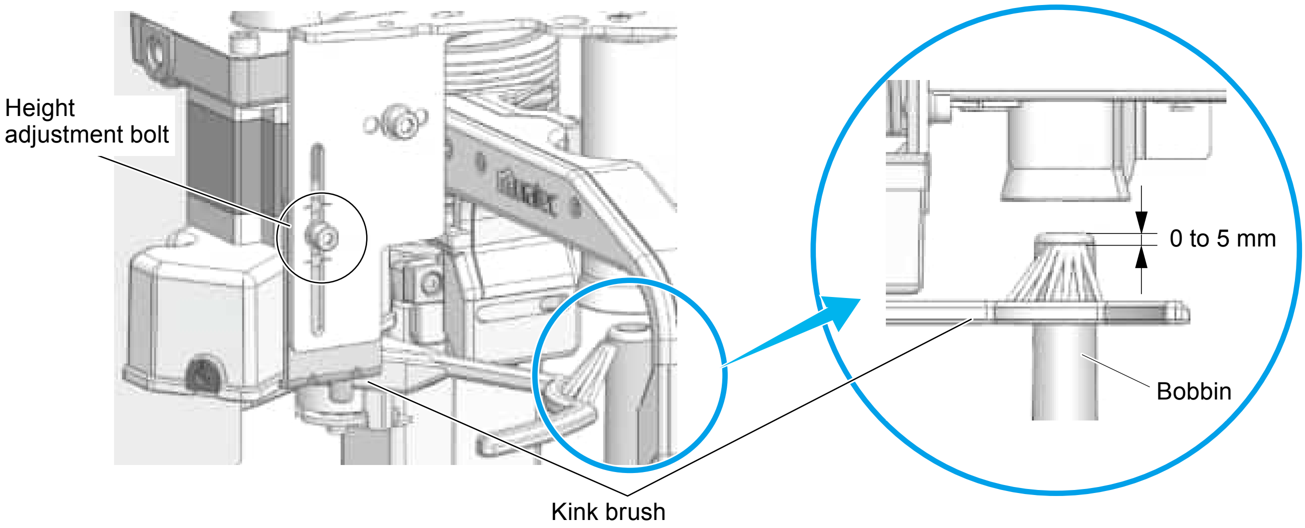
Chapter

4Ma Kink Preventer

Sec 1 Adjustment Standard

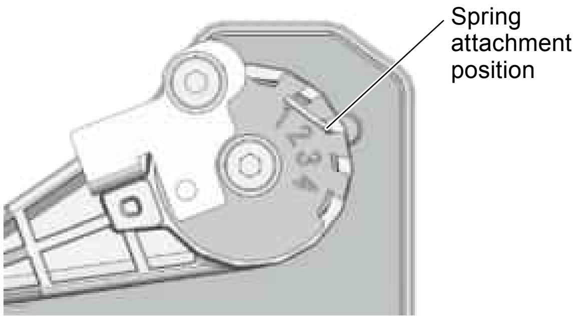
1-1 Kink Preventer Height

Adjust the height of the kink preventer using the installed bracket bolt. Adjust the kink preventer position so that the end of the brush is between 0 to 5 mm from the end of the bobbin.


Height adjustment bolt
0 to 5 mm
Bobbin
Kink brush

1-2 Brush Holding Force

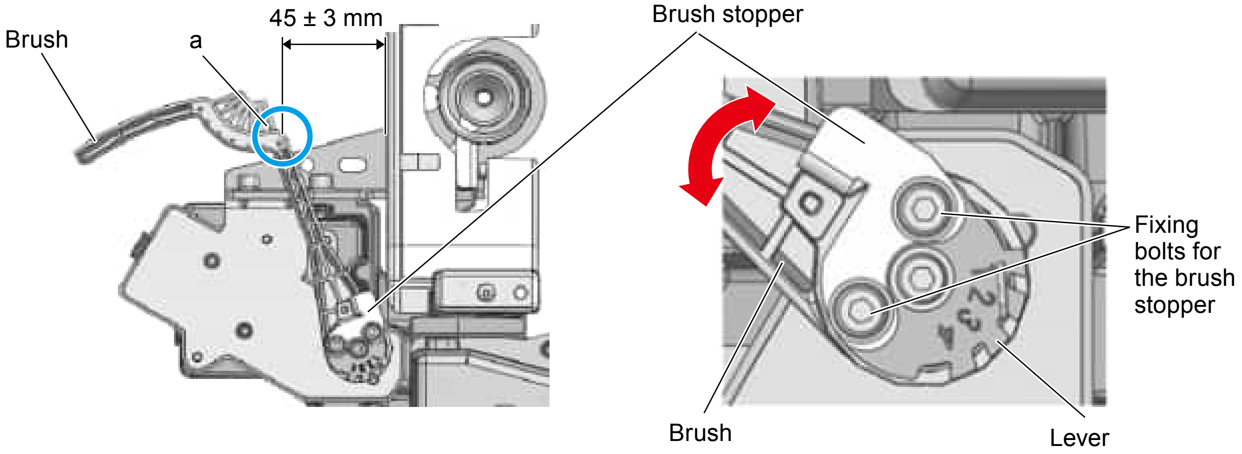
You can adjust the brush holding force of the bobbin by adjusting the position of the kink spring.
Setting it to a larger number increases the strength of the brush's holding force.
The default setting is the No.2 position.


Spring attachment position
1
2
3
4

1-3 Kink Standby Position Adjustment

Adjust the kink standby position at the brush stopper position.

1. **Adjust the brush stopper position so that the distance between the rear side of the Bal-Con and point “a” in the kink diagram is 45 ± 3 mm.**

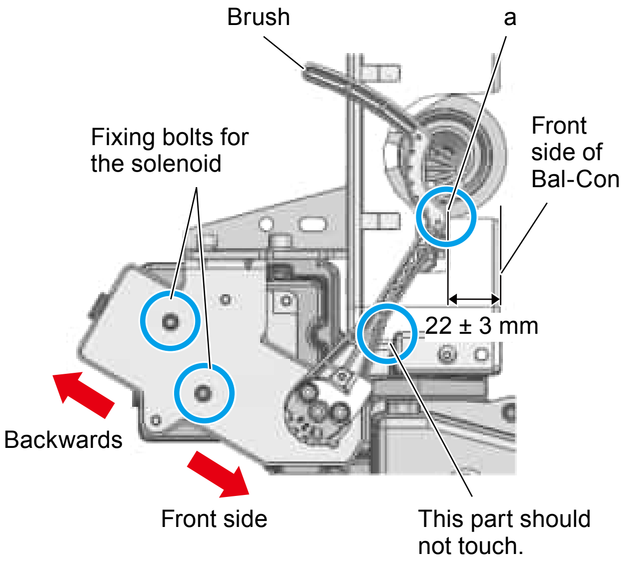

Brush
a
45 ± 3 mm
Brush stopper
Fixing bolts for the brush stopper
Brush
Lever

1-4 Kink Operating Position Adjustment

Adjust the kink operating position at the solenoid position.

1. **Set to “Kink Operating Position Adjustment Mode” on the VOS maintenance screen. (Refer to Chapter 3)**
2. **Use the unit operation buttons to set the position where the kink operates.**
3. **Make adjustments using the fixing bolts for the solenoid so that the distance between the front side of the Bal-Con and point “a” in the kink diagram is 22 ± 3 mm.**

Front side of solenoid	Brush operating position moves backwards
Rear side of solenoid	Brush operating position moves forward


Brush
a
Fixing bolts for the solenoid
Front side of Bal-Con
22 ± 3 mm
Backwards
Front side
This part should not touch.

CAUTION

- Ensure that the kink and the Bal-Con should not touch each other.
- Make sure that the Bal-Con sensor is not ON when there is no bobbin.

1-5 VOS Settings

The VOS settings are listed below. Change the setting conditions when necessary.

Kink Action (Doffing)	Select from: ON / ON (bunch-off) / OFF
Kink Action	Select "ON"
Kink On Delay	Set between 0 (OFF) and 2.0 seconds
KinkOnDelay(CopChange)	Set between 0 (OFF) and 2.0 seconds
Kink Off Delay	Set between 0 (OFF) and 2.0 seconds

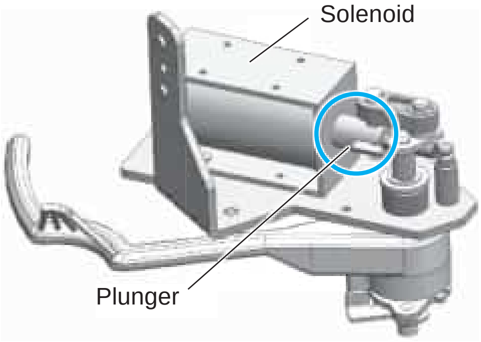
Sec 2 Maintenance

2-1 Cleaning

If the kink brush operation is sluggish, remove the solenoid plunger and clean off any contaminants or dust.

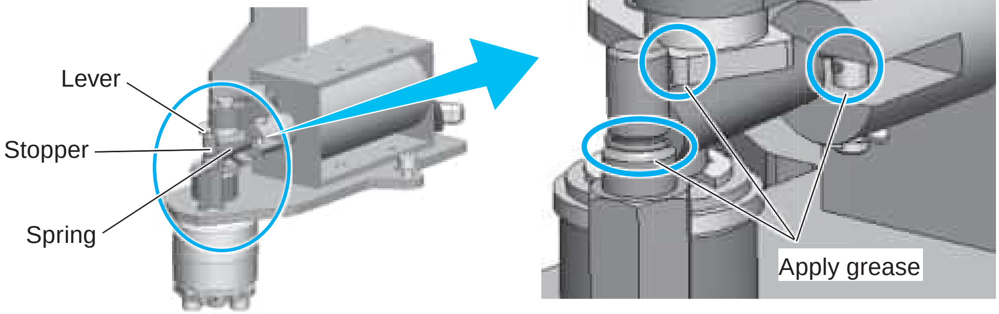
CAUTION

Do not lubricate the plunger.
It can cause malfunctions.


Solenoid
Plunger

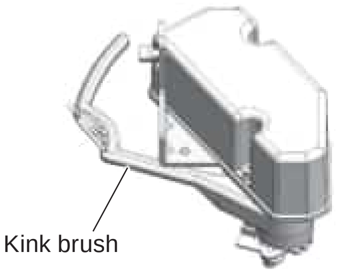
2-2 Lubrication

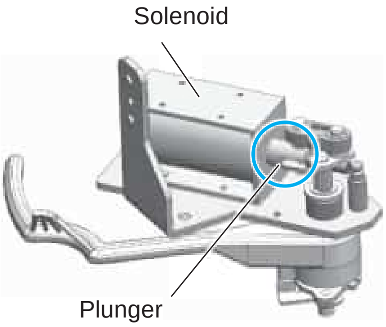
Frequency	Lubricant	Item
Every 6 months	Extreme-pressure lithium-based grease with mineral oil and molybdenum disulfide	Contact area between stopper and lever
		Spring hook

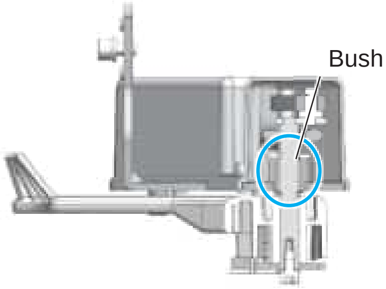

Lever
Stopper
Spring
Apply grease

Sec 3 Consumables

If the parts below are worn causing a failure or problem, replace the worn part or parts with a new one.




Solenoid
Plunger



Chapter
4Pa Ejector

Introduction

Make adjustments from the left following the order of the arrows. The adjustment procedures are noted in the adjustment standards for each chapter.

Item to be adjusted / When adjustment is necessary	1-1 Bal-Con height →	1-2 Bobbin holder position →	1-3 Bobbin angle and right/left position →	1-4 Movable Bal-Con stop position →	1-5 Bobbin forward/rear position
When replacing a winding unit	○	○	○	○	○
When performing a lot change (When the Bal-Con and ejector are not removed)	○	○	---	○	○
When removing the only Bal-Con	○	---			
When removing the only ejector	---	○	○	---	
*Reference chapter in instruction manual	Chapter 4Lb	Chapter 4Pa	Chapter 4Pa	Chapter 4Lb	Chapter 4Lb

CAUTION

If the Bal-Con sensor position is changed, the forward or rear position of the bobbin will change relative to the movable Bal-Con.
Set the movable Bal-Con stop position on the VOS.

Sec 1 Adjustment Standard

1-1 Bal-Con Height

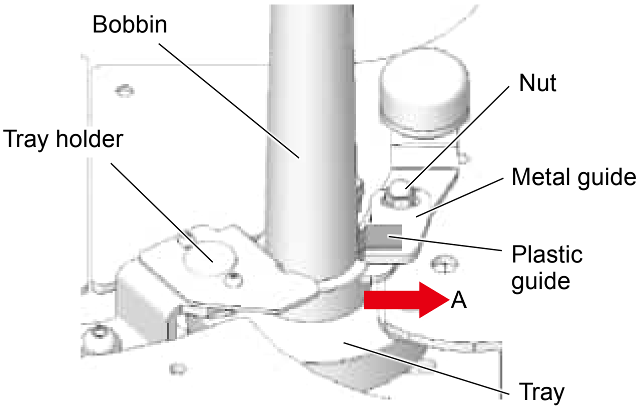
Refer to Chapter 4Lb.

1-2 Bobbin Holder Position

Adjust the bobbin holder position so that there is no gap between the bobbin and the tray.

CAUTION

This part does not exist when using a spring tray.



1. **Set a tray with empty bobbins in the position indicated in the figure at the right.**
2. **Loosen the nut and place the bobbin between the tray holder and metal plate guide and fix the metal plate guide's position.**

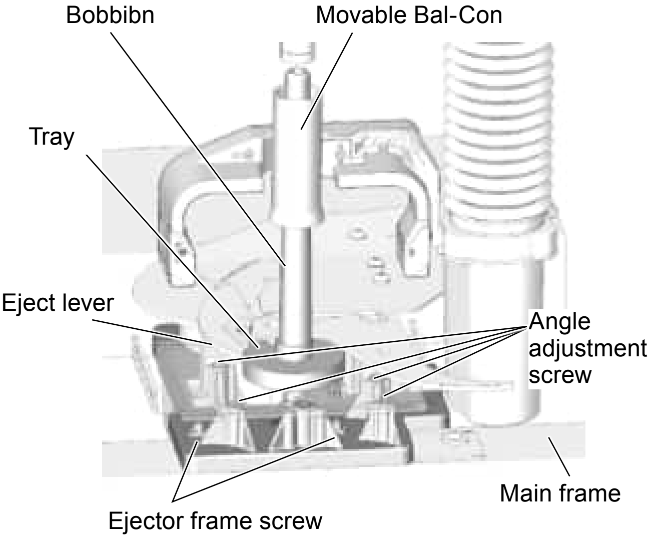
* Adjust while the tray is positioned all the way toward side A from the winding position.

CAUTION

- If the gap between the bobbin and the tray is not appropriately set, the automatic centering function may not work correctly. If the bobbin position changes, check the gap between the bobbin and the tray, and re-adjust when necessary.
- Ensure that the bobbin and the plastic guide always touch each other. If there is a gap, the bobbin may rotate during the winding operation.
  When setting the bobbin, apply the plastic guide to the bobbin with just enough pressure so that bobbin stays in place on its own. Otherwise, if you apply the guide with too much pressure, the bobbin will not be set right, and if the yarn gets entangled, the bobbin may pop up with it.

1-3 Bobbin Angle & Left/Right Position

When removing the Bal-Con and the ejector, re-adjust the ejector.
Adjust the left or right position of the bobbin using the "Bal-Con Operation Check" in the VOS settings. (Refer to Chapter 3)
Adjust the ejector, and align the left or right position of the bobbin so that it is centered with the movable Bal-Con.

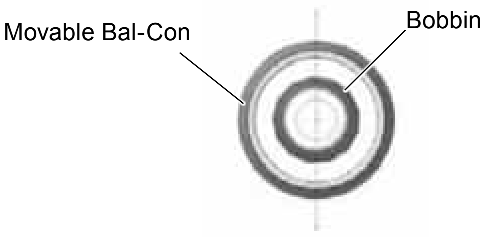


CAUTION First check if the Bal-Con height has been adjusted before adjusting the ejector position.

1. **Set to "Bal-Con Operation Check" on the VOS maintenance screen. (Refer to Chapter 3)**
2. **Fix the tray with the bobbin in the winding position.**
3. **Set the Bal-Con to the bottom position.**
4. **If the bobbin is leaning in a particular direction, adjust it so that it is standing upright, using the angle adjustment screw.**

CAUTION If the bobbin is leaning in a particular direction, the movable Bal-Con may not completely descend to the bottom position.

5. **Loosen the ejector frame screw, adjust the ejector, and align the left or right position of the bobbin so that it is centered with the movable Bal-Con.**



Align the left or right position of the bobbin so that it is centered with the movable Bal-Con

1-4 Movable Bal-Con Stop Position

Refer to Chapter 4Lb.

1-5 Bobbin Forward/Rear Position

Refer to Chapter 4Lb.

1-6 VOS Settings

The VOS settings are listed below. Change the setting conditions when necessary.

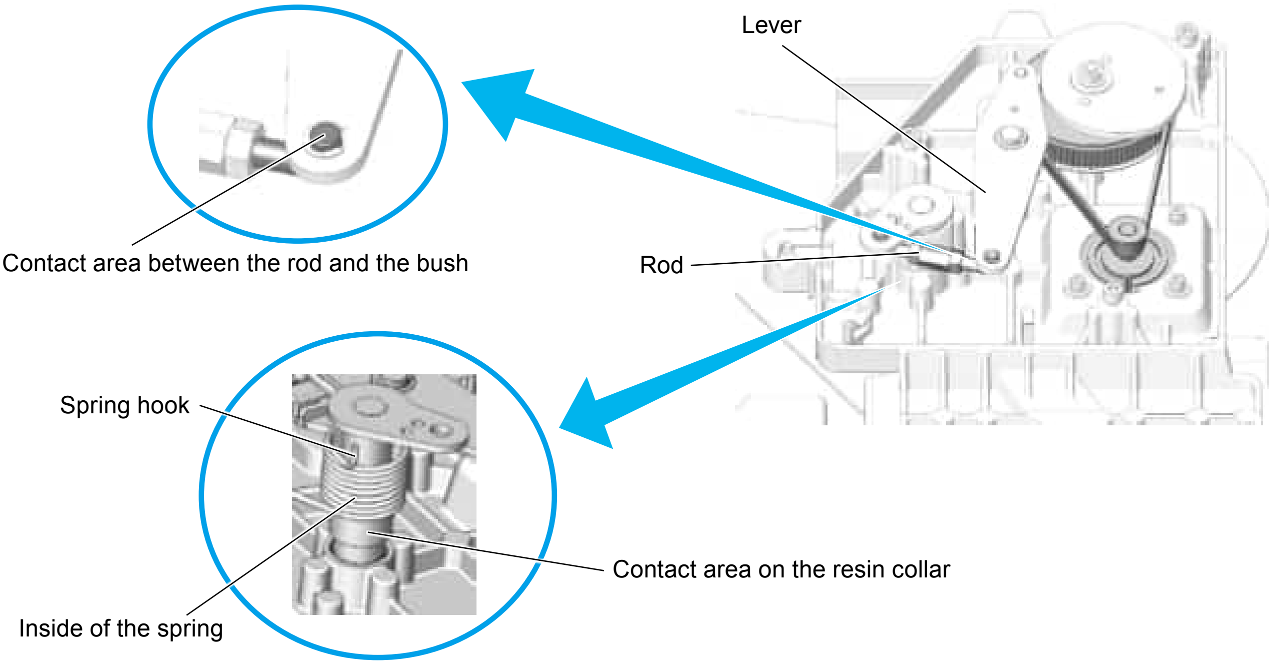
Bobbin auto centering fctn	Selet "ON"
Bal-Con Operation Check	Select "OFF" or "ON"

CAUTION The automatic centering function cannot be used in the following conditions.
- With bobbins that transmit light
- With bobbins that have front end damage
- With bobbins that cannot traverse the Bal-Con sensor

Sec 2 Maintenance

2-1 Inspection & Lubrication

Frequency	Item	Guideline
Yearly	Ejector	- Clean and lubricate the inside and outside of the Ejector - Apply to (two locations) the contact area between the rod and the lever and the contact area between the rod and the bush - Apply to the spring hook and the inside of the spring - Clean the contact area on the resin collar * Extreme-pressure lithium-based grease with mineral oil and molybdenum disulfide (wet type)

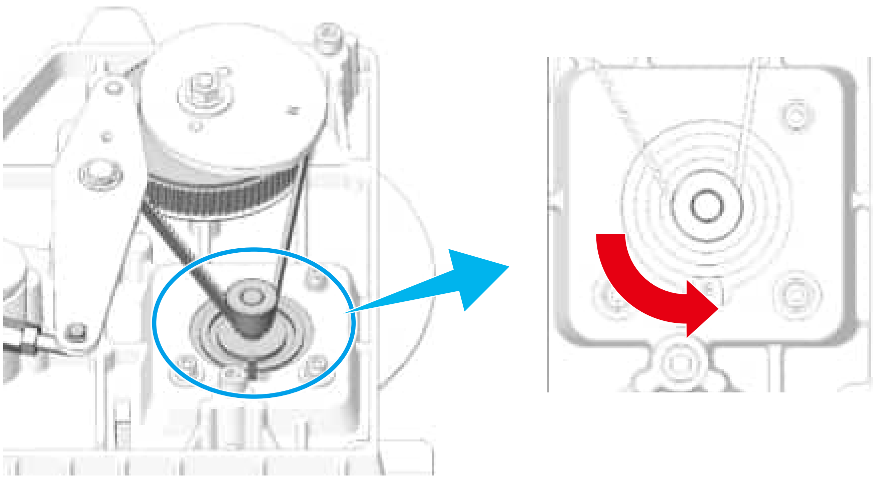

Lever
Contact area between the rod and the bush
Rod
Spring hook
Contact area on the resin collar
Inside of the spring

2-2 Tightening the Timing Belt

Turn and adjust the motor.

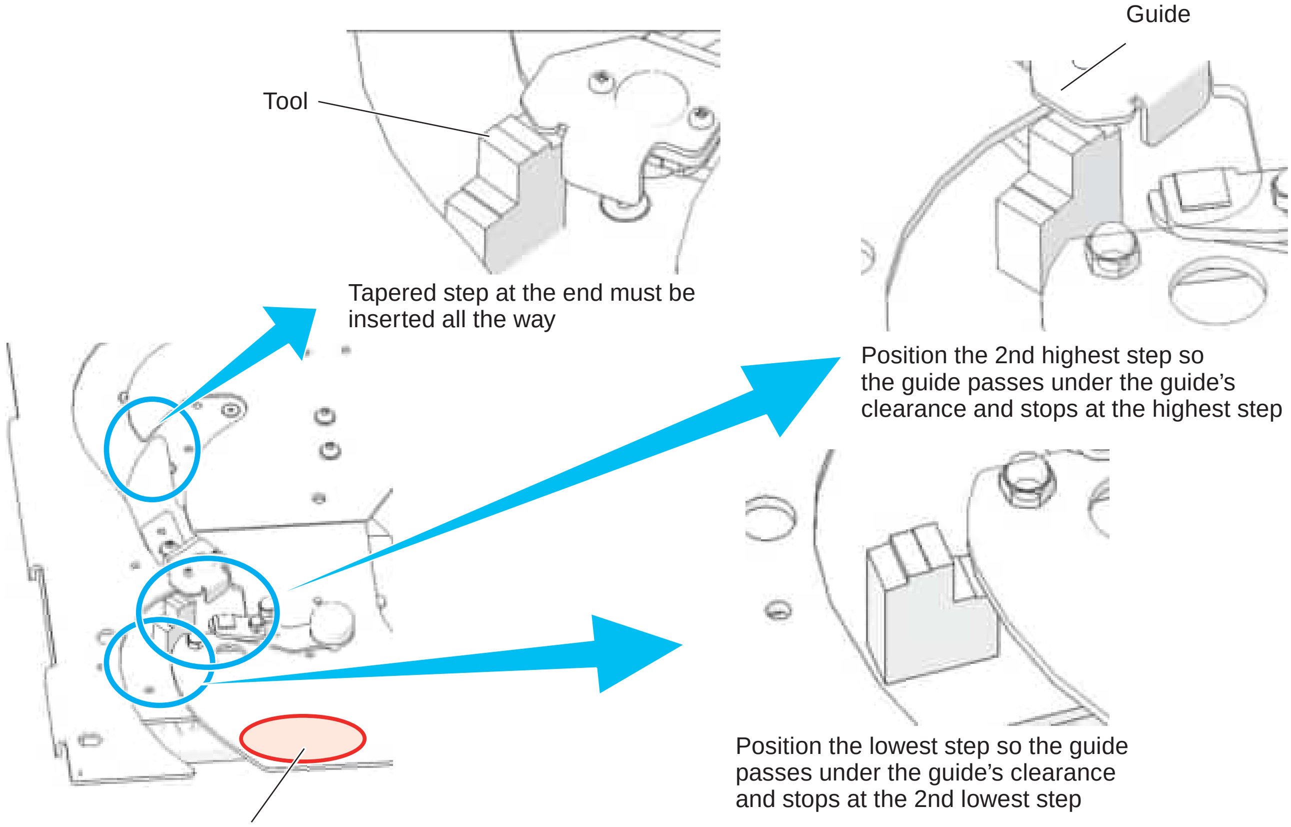
CAUTION

Ensure that the belt is not too slack or too taut. (Recommended tension: 30.2 – 40.6 N)
Malfunctions could occur if the tension is out of the recommended range.



2-3 Checking Height with Tool

Use the tool to check the height in the following 3 locations. If there is a problem with the height, correct it.



Tapered step at the end must be inserted all the way

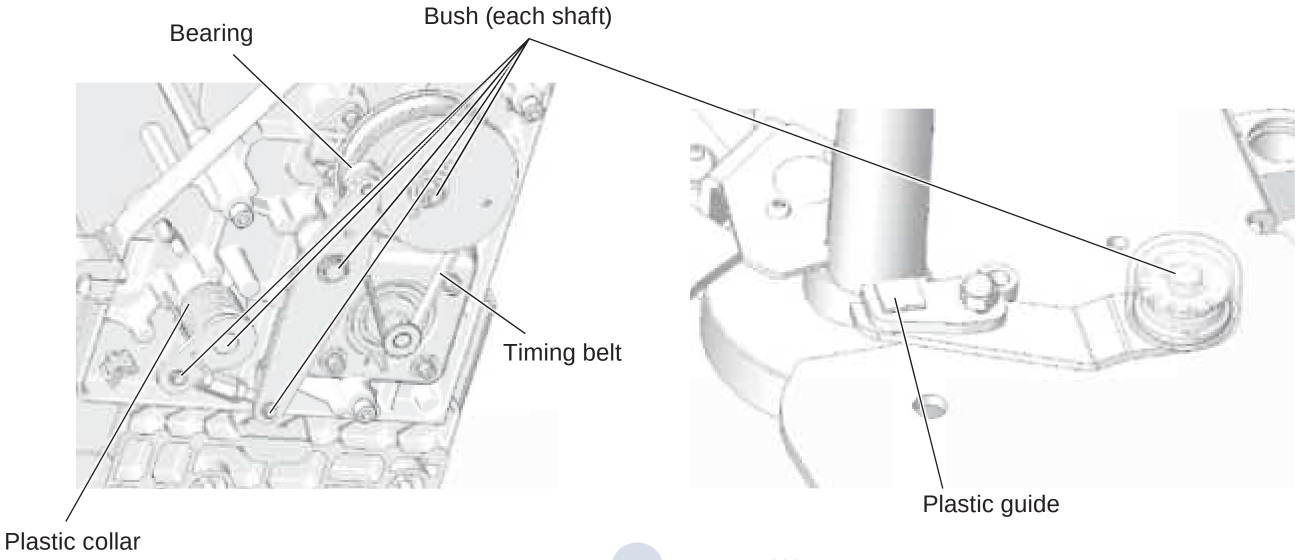
Position the 2nd highest step so the guide passes under the guide's clearance and stops at the highest step

Position the lowest step so the guide passes under the guide's clearance and stops at the 2nd lowest step

CAUTION When getting on a step ladder to set up the take-up tube, be careful not to step on this part. If you step on the metal guide, it could deform.

Sec 3 Consumables

If the parts below are worn causing a failure or problem, replace the worn part or parts with a new one.



Chapter

5Aa Air Piping (System Line)

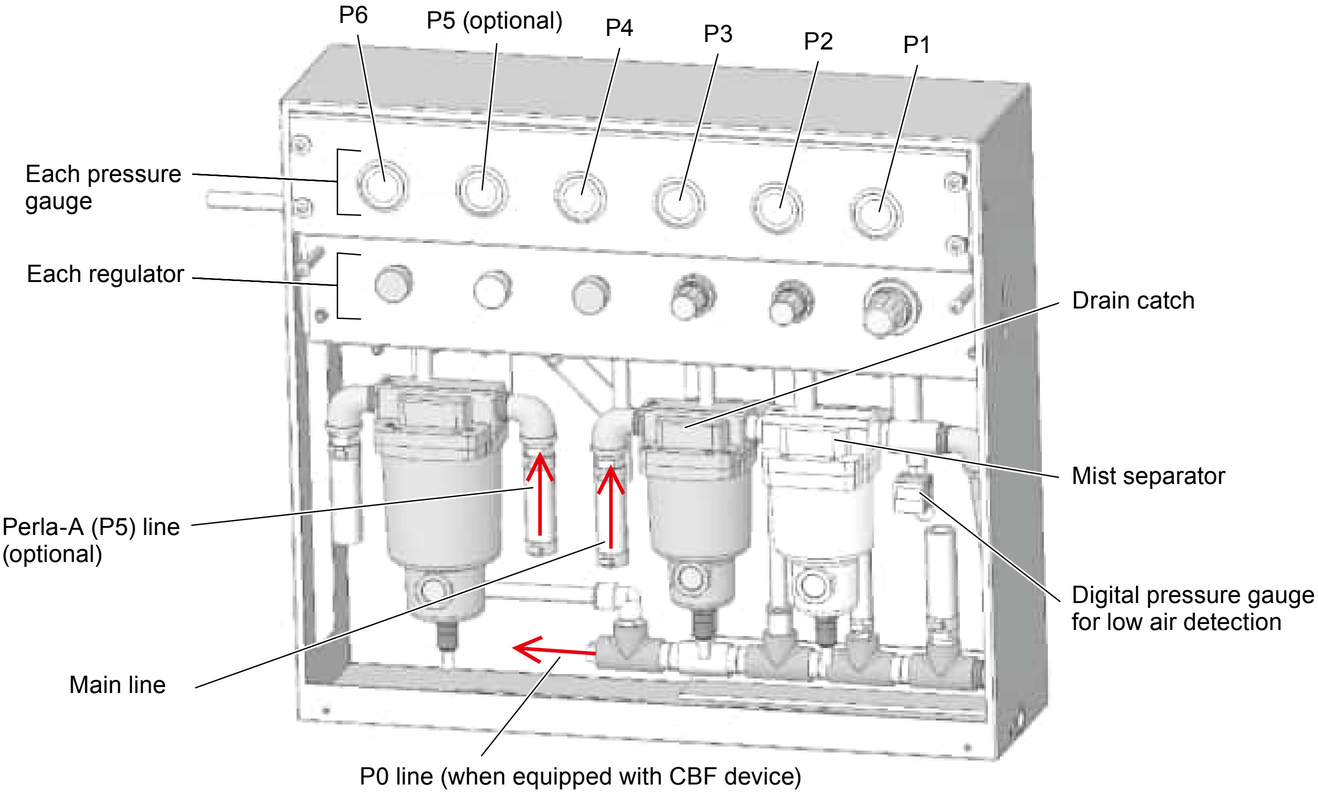
In this specification, P2 (for splicing) and P4 (for contact pressure adjustment) are the same for all winding units.

Names of Each Part

- **Regulator box**

All regulators on the system line* are set up in the regulator box located on the back side of the blower box. For L machines, P1 through P6 are positioned in sequential order from the control box side (right side when facing it). [Optional specification for P5 (Perla-A)]

* System line' refers to a singular piping system shared by all devices throughout the machine setup.


P6
P5 (optional)
P4
P3
P2
P1
Each pressure gauge
Each regulator
Drain catch
Mist separator
Perla-A (P5) line (optional)
Digital pressure gauge for low air detection
Main line
P0 line (when equipped with CBF device)

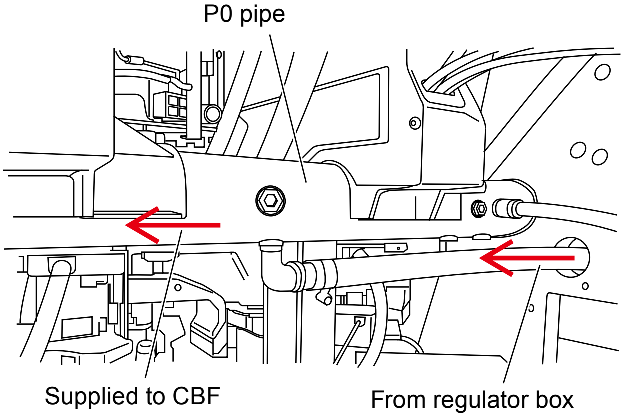
Sec 1 Adjustment Standard

1-1 Air Line

The system for the air lines is made up of a main line (P1, P2, P3, P4 and P6) and the Perla-A (P5) line.
In addition, when equipped with a CBF device, the piping runs from the end of the main line through the P0 pipe (unit).
For each line, air is supplied to each pipe behind the regulator and the unit. (Refer to Chapter 4 for further details on each item)

P0 Line

Air is supplied from the P0 pipe to the CBF side.
P0 line supply parts of the first winding unit span are shown in the figure on the right (back side of the machine).



Application & Pressure Setting Guideline for Each Pipe

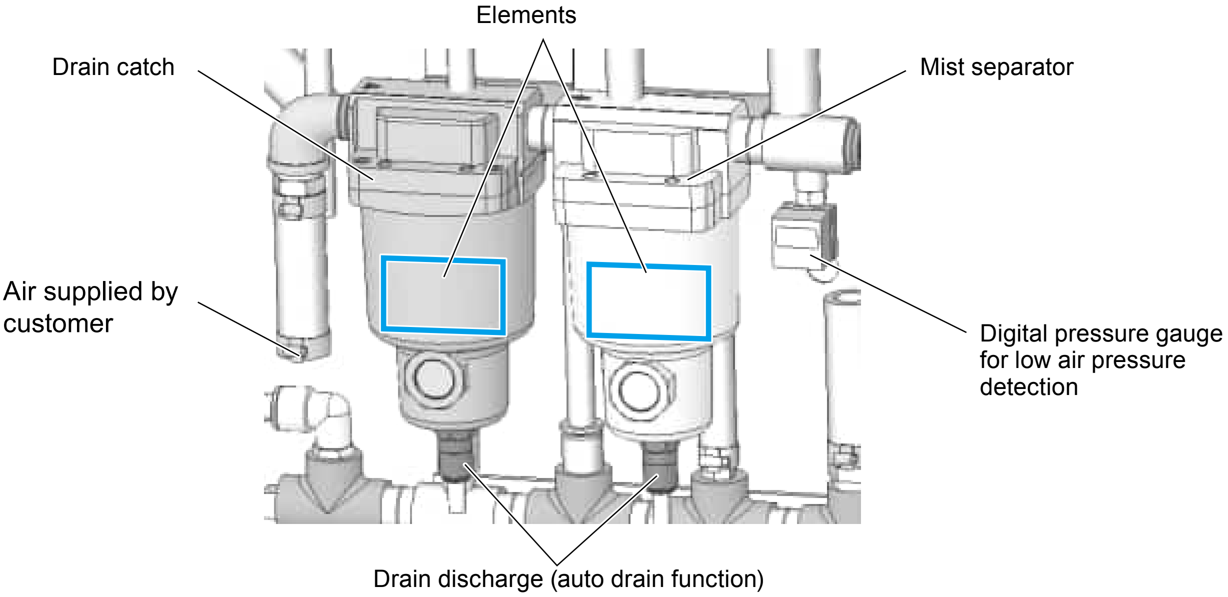
Pipe type	Regulator quantity	Application	Pressure setting
P0	None	Conveyor blast, CBF	Air pressure supplied and set by factory
P1	1 per machine	Splicer untwisting, Cleaning blast, Package conveyor, Dust collector, AD	Fixed: 0.65 MPa
P2		Splicer splicing	Setting range: 0.3 to 0.65 MPa * Adjustment depends on yarn type
P3		Contact pressure, Cradle lifter, Package brake, Bal-Con cutter, Magazine cutter, Blowing up	Fixed: 0.35 MPa
P4		Contact pressure adjustment	About 0.1 MPa * Adjustment depends on winding conditions
P5		Perla-A (optional)	About 0.2 MPa * Adjustment depends on hairiness of yarn
P6		Take-up tube support	Fixed: 0.1 MPa

Sec 2 Maintenance

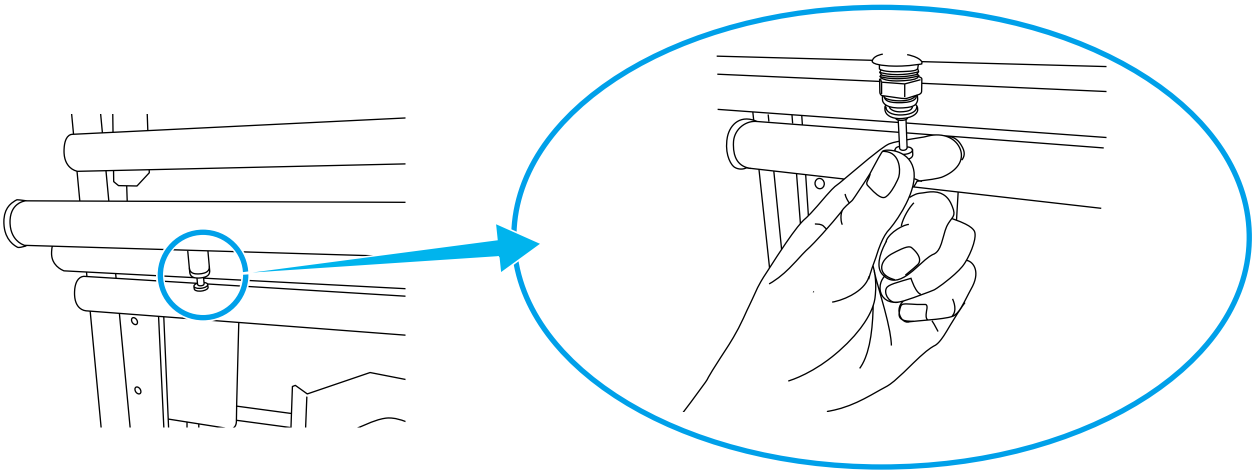
Perform regular inspections and cleaning following the table below in order to maintain stable air flow.

Frequency	Item	Guideline
Weekly	Drain discharge inspection for drain catch and mist separator	Check whether the drain catch and mist separator perform the draining operation automatically * This product has an auto drain function and drains automatically. Check to make sure.
	Drain discharge for each pipe	Remove the plug on the out-end span section behind the unit, and drain each pipe
Every 6 months	Low air pressure check on main line	Replace the drain catch and the mist separator on the main line when the following conditions apply - When there is a difference of 0.1 MPa or greater between the air pressure supplied by the customer and the digital pressure gauge reading on the regulator box - After 2 years of use
Every 2 years	Replace element (Due to time-related deterioration)	

2-1 Drain Catch & Mist Separator


Elements
Drain catch
Mist separator
Air supplied by customer
Digital pressure gauge for low air pressure detection
Drain discharge (auto drain function)

2-2 Drain Discharge For Each Pipe



Sec 3 Consumables

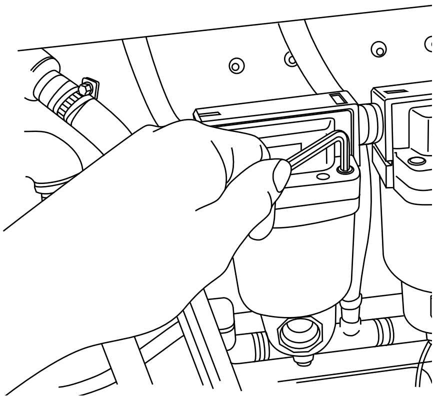
If the parts below are worn causing a failure or problem, replace the worn part or parts with a new one.

CAUTION

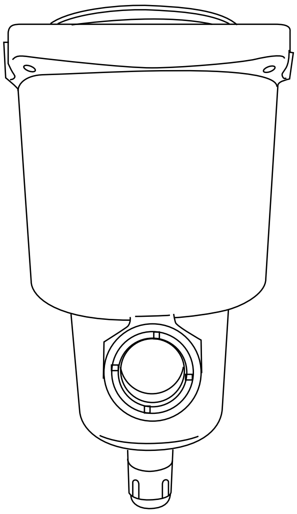
Always check that there is no air inside first before performing the replacement.

Element Replacement Method

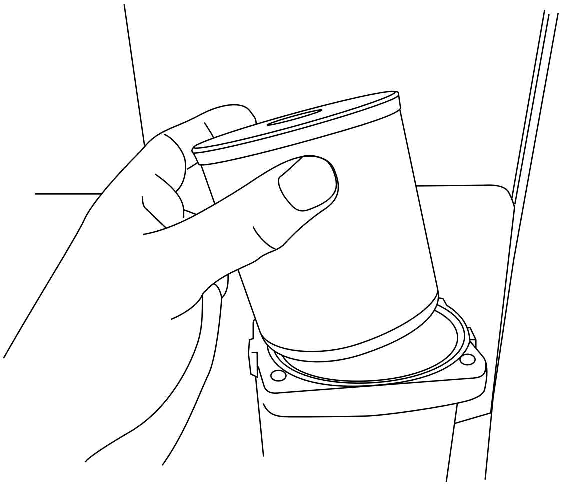
1. **Remove the screws for the drain catch and the mist separator.**



2. **Remove the lower half of the component.**



3. **Remove the element from inside and replace.**



Chapter 5Ba Blower (Individual)

Sec 1 Adjustment Standard

1-1 Blower Operation Frequency Setting

Check the reading (which varies depending on the yarn count and type) on the static pressure gauge attached to the out-end, and then enter the appropriate blower frequency on the VOS.

[Guide for frequency setting range and appropriate static pressure]

Motor capacity	Variable frequency range	Appropriate static pressure
7.5 kw	56 to 72 Hz	320 to 500 mmAq
11 kw	56 to 77 Hz	
15 kw	56 to 81 Hz	

1-2 VOS Settings

The VOS settings are listed below. Change the setting conditions when necessary.

Blower Speed Upper Limit	Set the frequency (Refer to table in previous section)
Blower Speed Lower Limit	
Blwr spd at MC standby pos	
Blower Speed Control	Select "OFF" or "ON"
Data Check Interval	Set the data detection time * Only when "ON" is selected for the blower speed control

Sec 2 Maintenance

Perform regular inspections and cleaning following the table below to ensure that the blower functions properly.

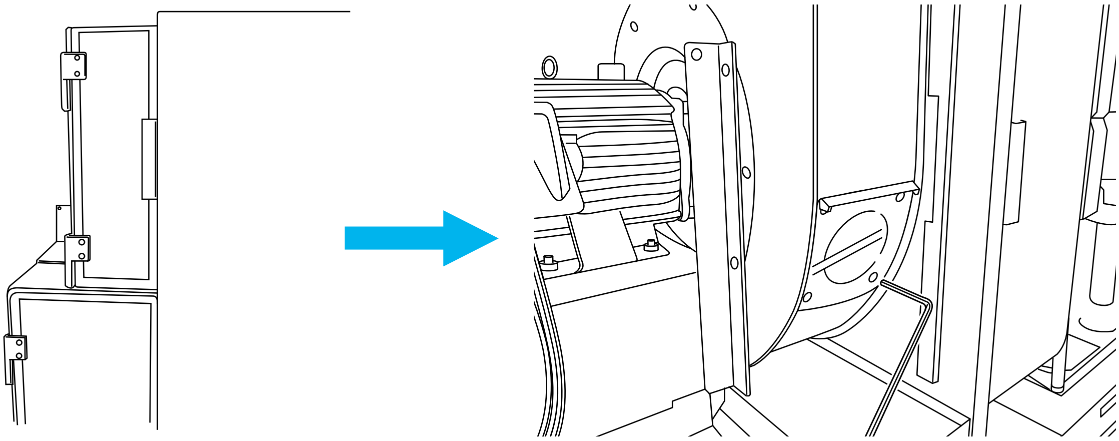
Frequency	Item	Guideline
Monthly	Impeller	Clean off the cotton fly buildup * Refer to the cleaning procedure below

2-1 Impeller Cleaning

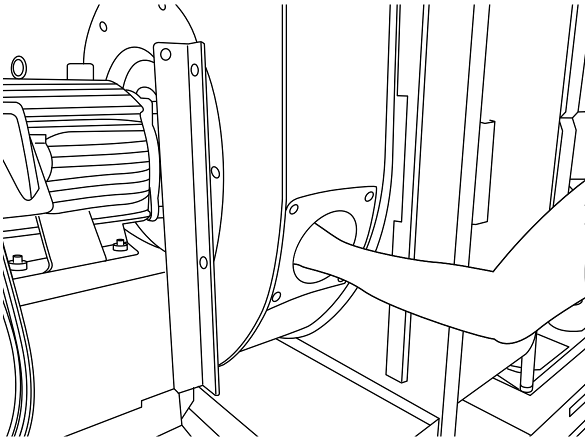
CAUTION

First check that all machine operations have stopped completely before cleaning.
Open the front door to the blower box, and check whether the impeller is rotating by looking through the cotton fly removal window.

1. **Open the cotton fly removal window.**



2. **Remove the cotton fly with your hands.**

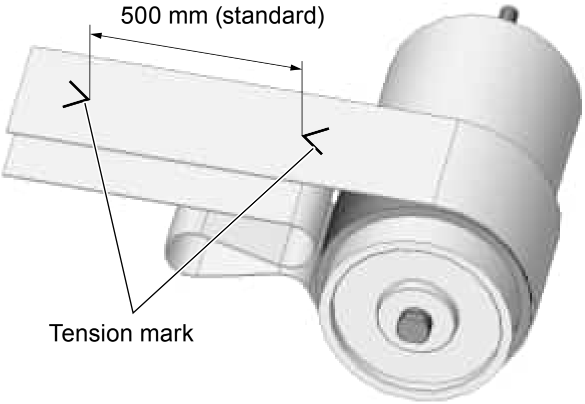


Sec 1 Adjustment Standard

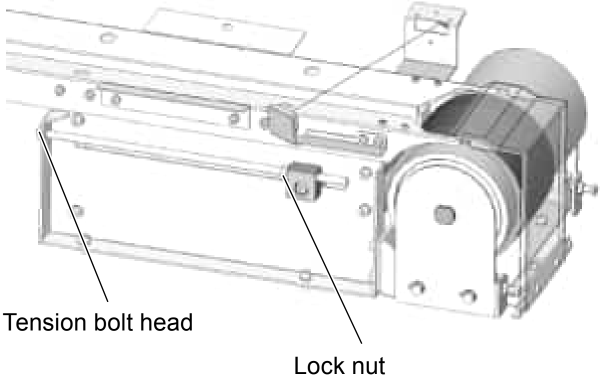
1-1 Belt Tension

The belt tension ratio should be between 0.6% and 0.8%.
Refer to the tension marks provided as shown in the diagram on the right. Measure the appropriate length with a tape measure and tighten.

The standard length (inside dimension) between the tension marks is 500 mm.
Ex:
If the length between the tension marks is 503 mm after tightening,
the tension ratio is 0.6% [(503 - 500) / 500 × 100].

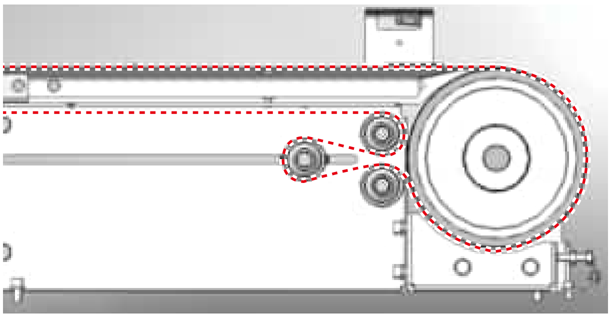


1. **Loosen the lock nut.**
2. **Adjust the tension by rotating the head of the tension bolt with a wrench (17 mm).**



Belt Attachment

Attach the belt as shown in the diagram on the right, and adjust the tension so that it is between 0.6% and 0.8 %.

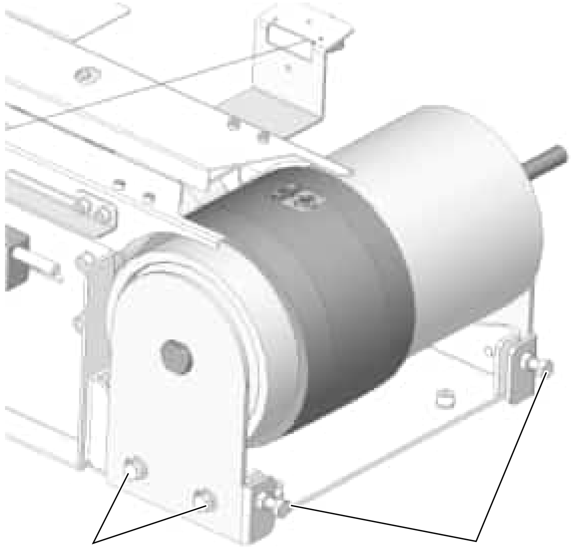


1-2 Adjusting the Belt Alignment

Motor Side

Adjust the alignment by screwing in or unscrewing the bolts on the right and left sides.

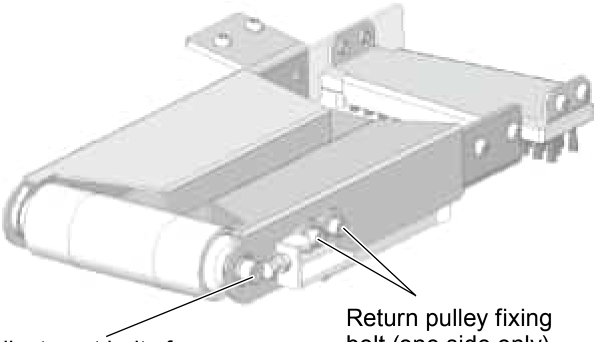
1. **Loosen the fixing bolts (both sides) for the motor.**
2. **Align the belt by screwing in or unscrewing the adjustment bolts.**


Motor fixing bolt (Both sides)
Adjustment bolts for alignment

Out-end (Return) Side

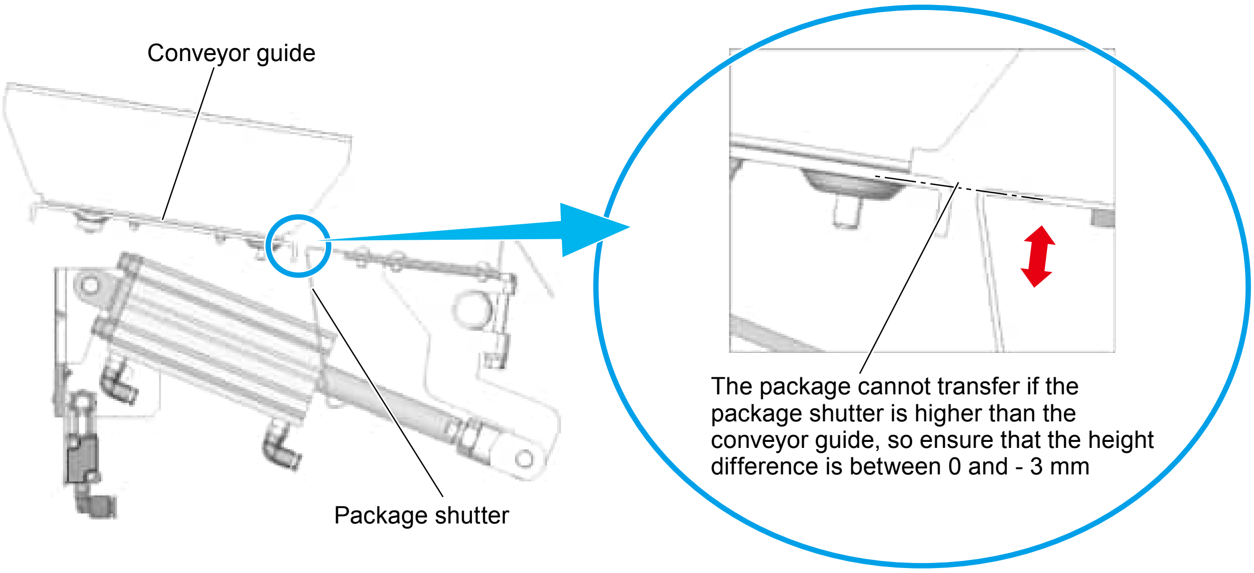
Adjust the alignment by screwing in or unscrewing the adjustment bolt.

1. **Loosen the fixing bolts (one side only) for the return pulley.**
2. **Align the belt by screwing in or unscrewing the adjustment bolts.**


Return pulley fixing bolt (one side only)
Adjustment bolts for alignment

1-3 Package Shutter

Stop the machine, ensure that there is no air inside the package shutter, and adjust.
Fully extend the package shutter, and adjust the package shutter so that the difference in height between the shutter and the conveyor guide is 0 to - 3 mm.


Conveyor guide
Package shutter
The package cannot transfer if the package shutter is higher than the conveyor guide, so ensure that the height difference is between 0 and - 3 mm

1-4 VOS Settings

The VOS settings are listed below. Change the setting conditions when necessary.

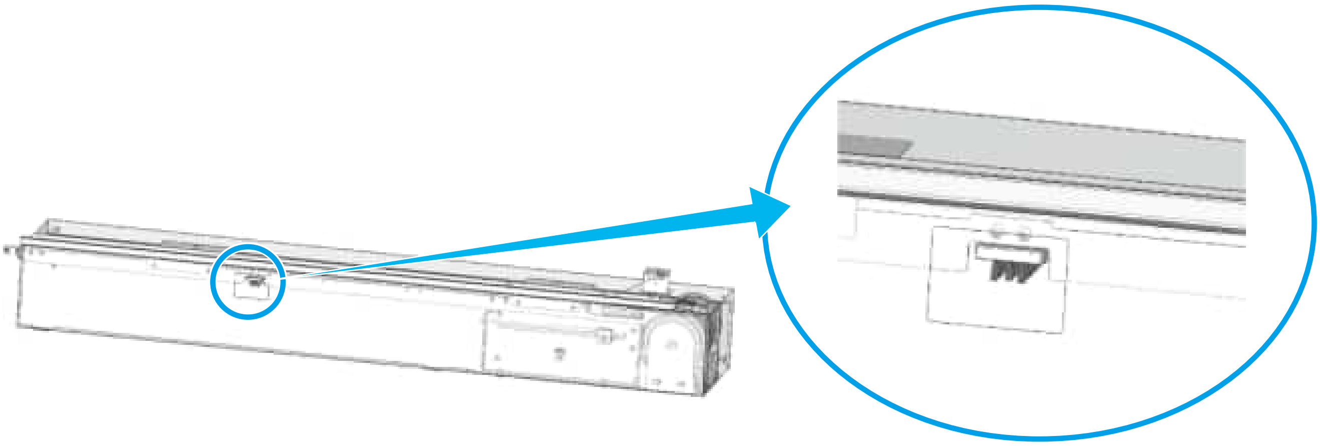
Package Conveyor Drive	Select "Manual" or "Auto"
Package Conveyor Mode	Select "Standard" or "PackageCheck"
Package Conveyor Alarm	Set the required time
Package C/V Auto Start	Set the required time for auto drive
Pkg C/V Flow Direction	Select the flow direction
Package Shutter (Span)	Set the group(s) when equipped with a shutter

Sec 2 Maintenance

2-1 Inspection & Cleaning

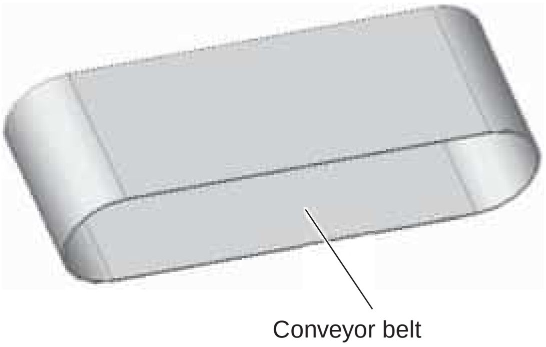
A build up of yarn waste leads to motor damage and belt cracking.

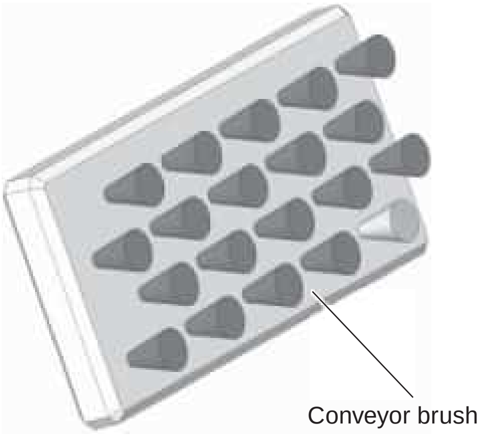
Frequency	Item	Guideline
Weekly	Conveyor brush	Remove the conveyor brushes on both ends, and remove any yarn waste that is stuck to it



Sec 3 Consumables

If the parts below are worn causing a failure or problem, replace the worn part or parts with a new one.

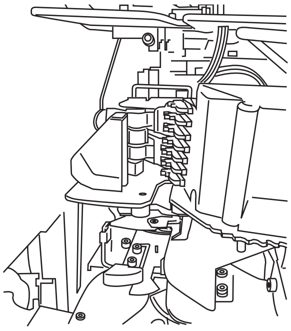

Conveyor belt

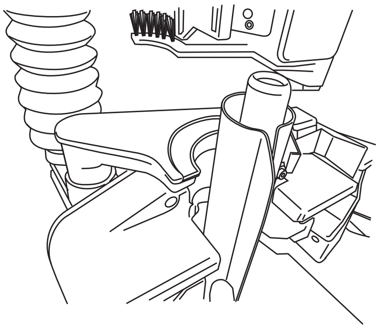

Conveyor brush

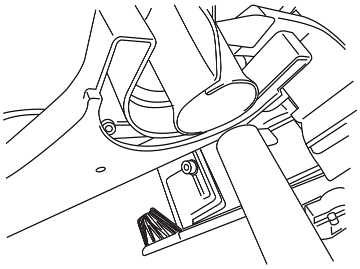
Chapter 5Da Dust Collector

Names of Each Part

- **Suction nozzle (on each winding unit)**

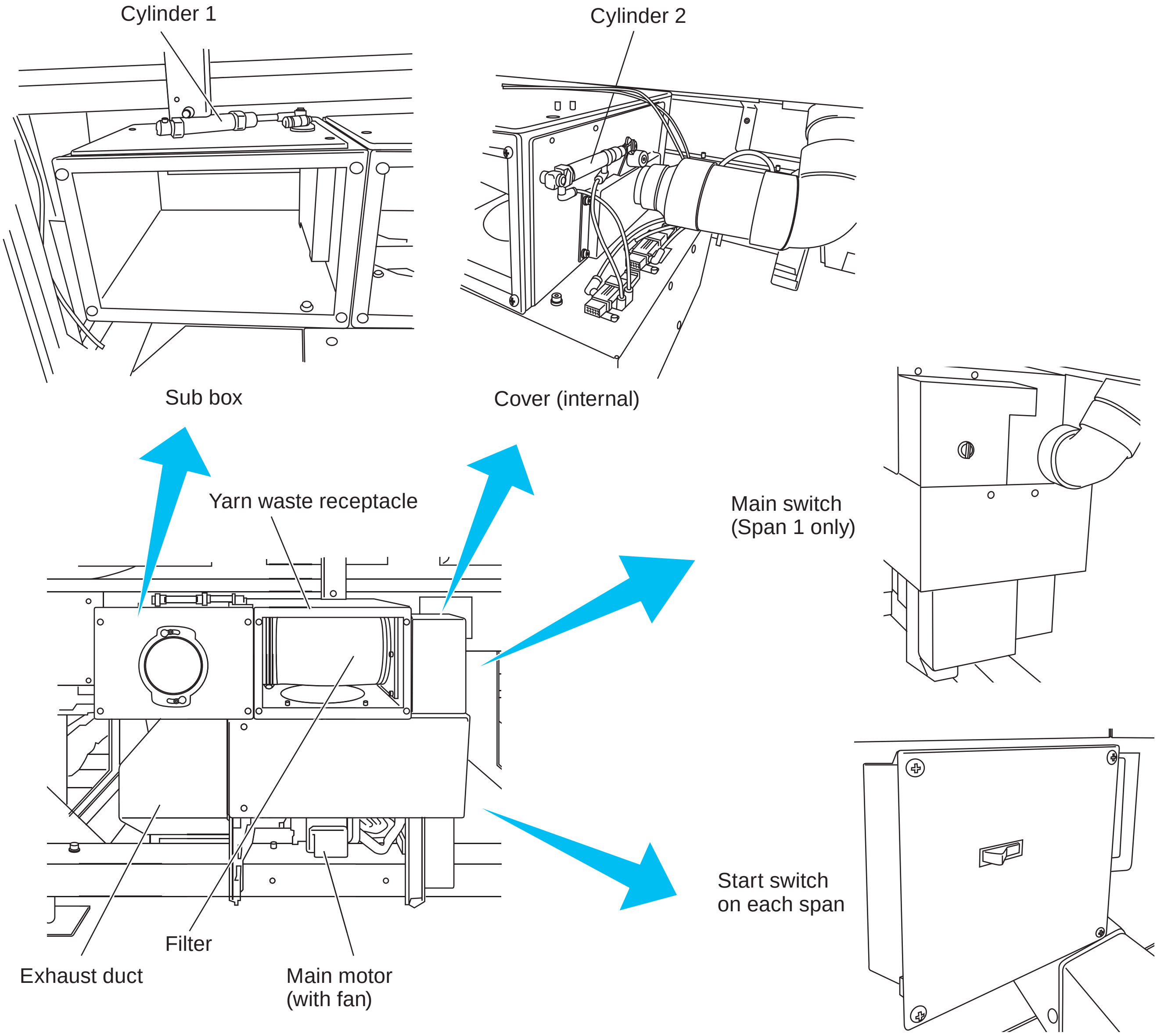

Gate tensor


Upper part of Bal-Con


Lower part of Bal-Con

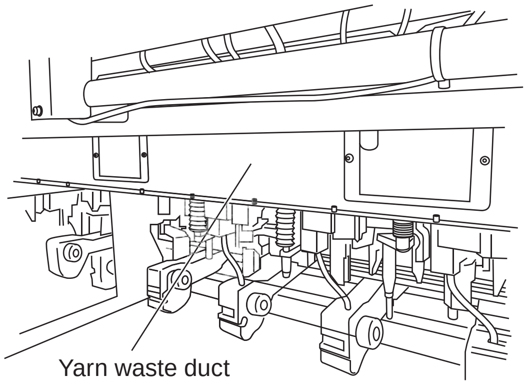
- **Fan motor for yarn waste (on each span)**

The fan blows the cotton fly which collects at the filter and holds it here in this space provided. After the cotton fly is held for a certain amount of time, it is sent to the yarn waste receptacle.


Cylinder 1
Cylinder 2
Sub box
Cover (internal)
Yarn waste receptacle
Main switch
(Span 1 only)
Start switch
on each span
Filter
Exhaust duct
Main motor
(with fan)

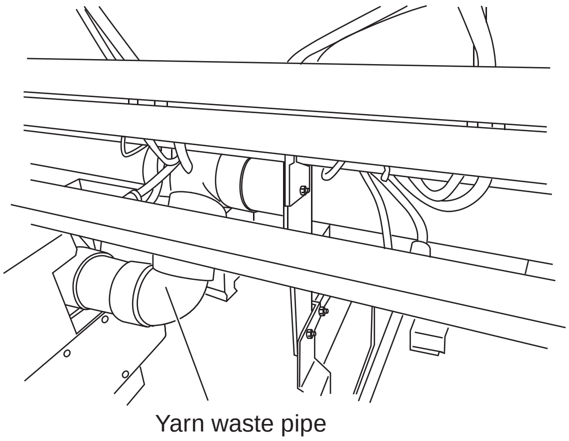
- **Yarn waste duct (on each span)**

The cotton fly is sucked up by the suction nozzle on the winding unit, passes through this duct and is sent to the yarn waste receptacle.

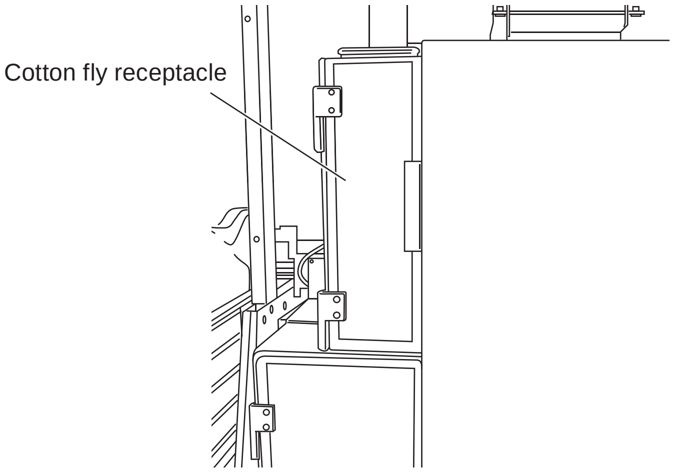


- **Yarn waste pipe**

After the cotton fly builds up in the yarn waste receptacle for a certain amount of time, it is released and sent through this pipe before being collected at the cotton fly receptacle on the blower.



- **Cotton fly receptacle**



Features

The suction nozzle sucks up the cotton fly that is being generated while being wound onto the spinning bobbins for each winding unit.

The cotton fly, which is sucked out from each winding unit, is first collected at the yarn waste receptacle on the back side of the machine. Then, it passes through the yarn waste pipe to be collected at the cotton fly receptacle on the blower at regular intervals.

The fan motor operation can be started and stopped using the operation switch located on the side of the yarn waste receptacle for Span 1 located on the back side of machine.

Sec 1 Adjustment Standard

The yarn waste is generally collected in 10 minute cycles.
The cotton fly may build up too much at the filter depending on the yarn type and yarn count. If this occurs, shorten the cycle time settings for the yarn waste on the VOS.

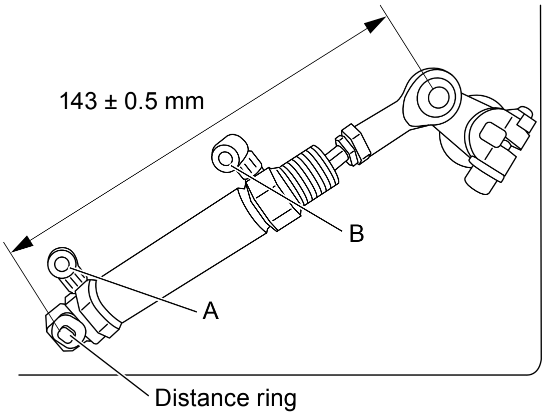
1-1 Cylinder

If the cylinder is removed for maintenance, adjust the length of the cylinder as shown in the diagram below when re-attaching.
When removing the cylinder, make sure that you do not lose or misplace the distance ring for each support.

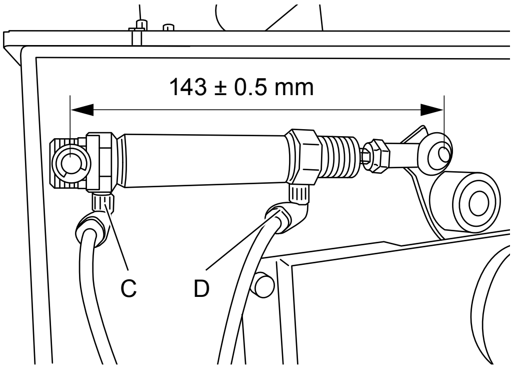
CAUTION

When adjusting the cylinder, always make sure that there is no air inside it.

- **Cylinder A**



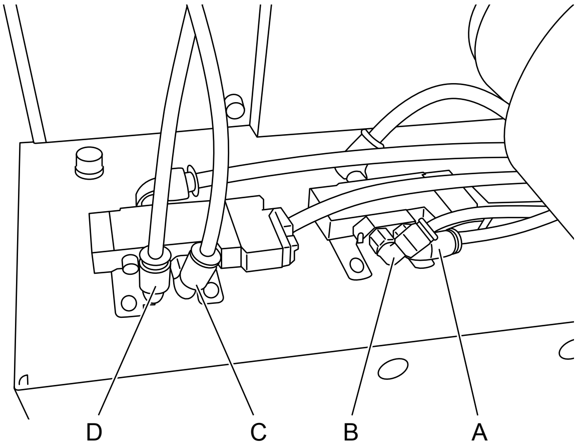
- **Cylinder B**



* When the cylinder has fully contracted, adjust the length between the cylinder's support point and the center of the hole for the rod end.

- **Air hose**

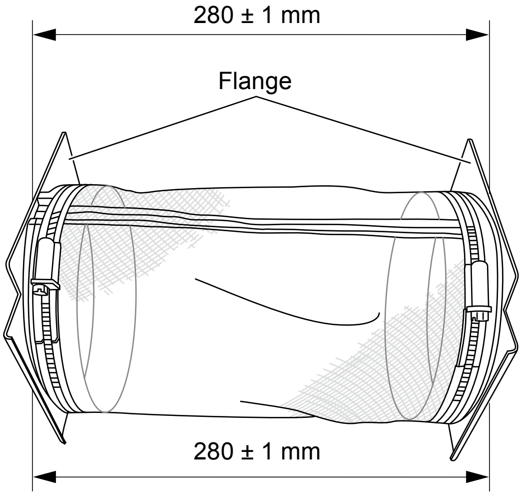
After adjusting the cylinder, connect each air hose to the corresponding solenoid valve joint.



1-2 Filter

When re-attaching the filter, adjust the flanges so that both ends are 280 ±1 mm apart on all four sides.

* Do not remove the filter from the flanges unless you need to replace a damaged filter.



1-3 VOS Settings

The VOS settings are listed below. Change the setting conditions when necessary.

Dust Collector Interval	Set the required time

Sec 2 Maintenance

Perform regular inspections and cleaning following the table below to ensure that the dust collector functions properly.

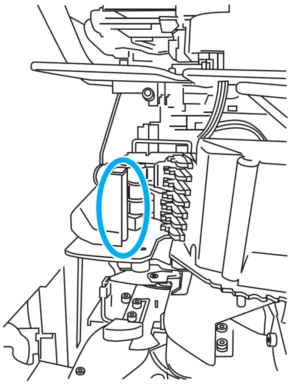
Frequency	Item	Guideline
Daily	Suction nozzles for all winding units	- Perform visual inspection to check for cotton fly buildup on nozzle - Use air gun to remove cotton fly on winding units with buildup
	Ducts for yarn waste on each span	- Perform visual inspection to check for cotton fly buildup - If there is buildup, open the check window to remove
	Filters on each span	- Perform visual inspection to check for clogging - Clean shutter if there is notable clogging
	Shutters inside the sub-boxes on each span	- Perform visual inspection to check for cotton fly buildup - Perform visual inspection to check for yarn dragging - Clean air cylinder if there is a lot of cotton fly build up or notable yarn dragging
Monthly	Suction nozzles for all winding units	Use an air gun to remove cotton fly building up on nozzle
	Filters on each span	Remove filter and use air gun to remove cotton fly buildup
	Shutters on each span	Open check window for sub-boxes and remove cotton fly build up with air gun or by hand
	Air cylinders on each span	Remove cotton fly buildup with air gun

CAUTION

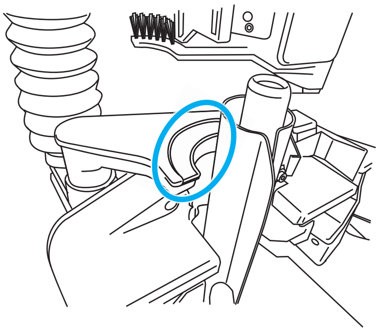
Always remove the air hose Φ6 connected to P1 for the shutter and the air cylinder to check whether the cylinder is operating or not before cleaning.

2-1 Suction Nozzle Cleaning

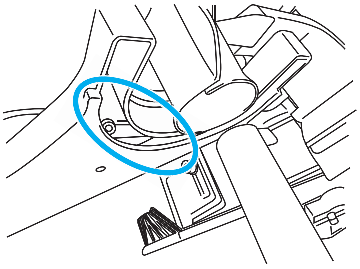
Use an air gun to remove the cotton fly buildup.



Gate tensor



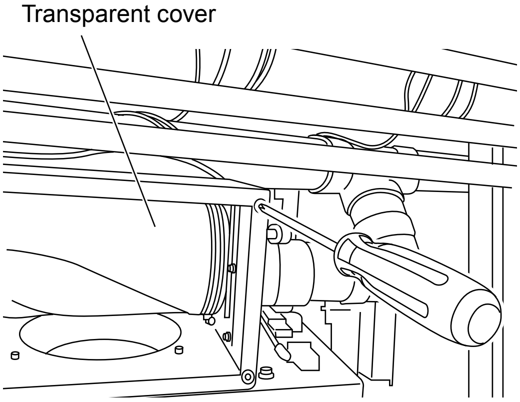
Upper part of Bal-Con



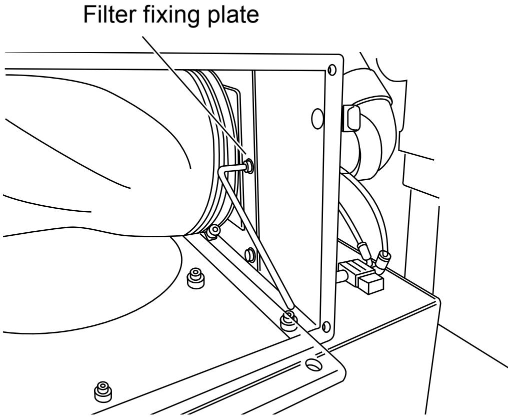
Lower part of Bal-Con

2-2 Filter Cleaning

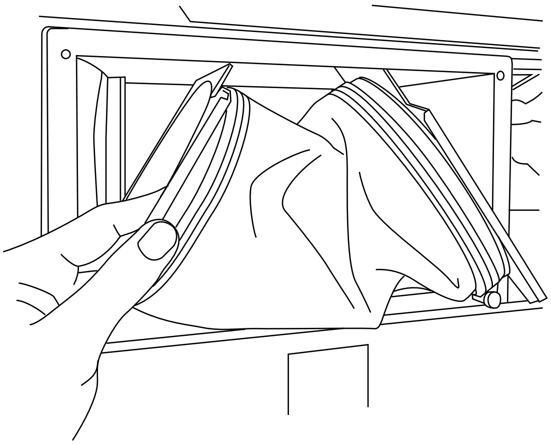
1. **Remove the transparent cover.**


Transparent cover

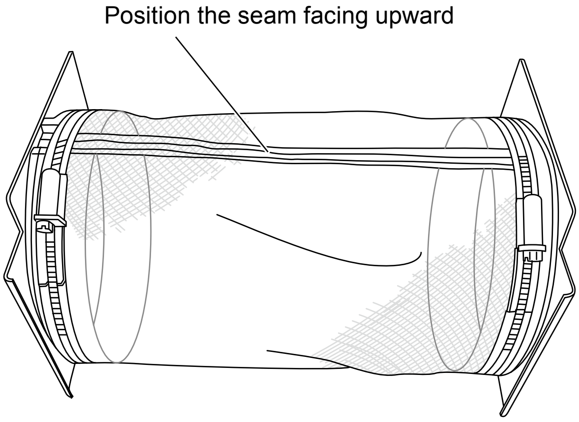
2. **Remove the plate that fixes the filter in place.**
   * Put the transparent cover down without letting the screws fall out.


Filter fixing plate

3. **Remove the filter.**



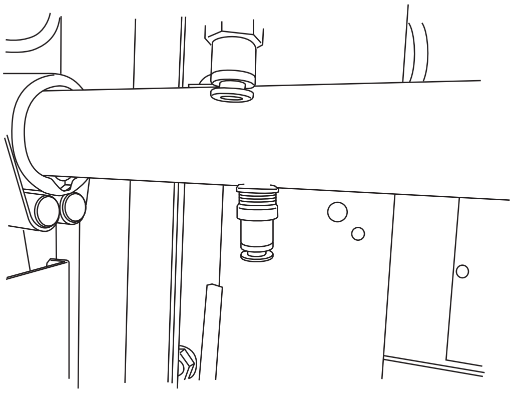
4. **Check if the filter is damaged and use an air gun to remove any cotton fly that is stuck to it.**


Position the seam facing upward

2-3 Shutter Cleaning

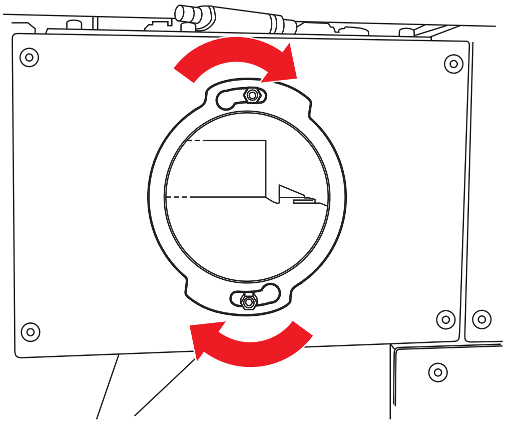
1. **Purge the air from the cylinder.**

   * Even if the air hose is disconnected, air will not leak out because there is a check valve.



2. **Turn the transparent cover on the sub-box in the direction of the arrow to open.**

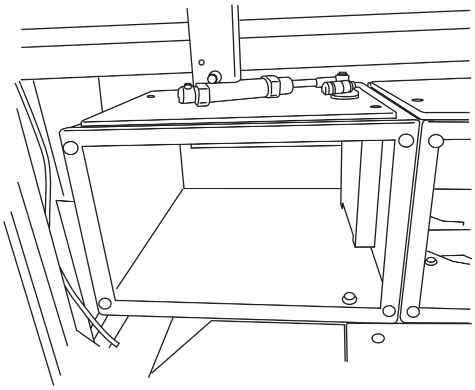
3. **Use an air gun or your hands to remove any cotton fly or yarn stuck to the shutter.**



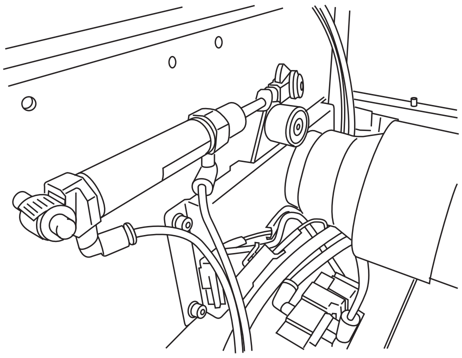
2-4 Air Cylinder Cleaning

Use an air gun to remove the cotton fly buildup.

* Open the cover and clean cylinder 2.



Cylinder 1



Cylinder 2

Sec 1 Mechanism

1-1 Each Mechanism

- **Main unit area**

Consists of the suction casing (with filter attached), the blow casing (with impeller), the differential pulley, and the belt shift mechanism.

- **Blow/suction area**

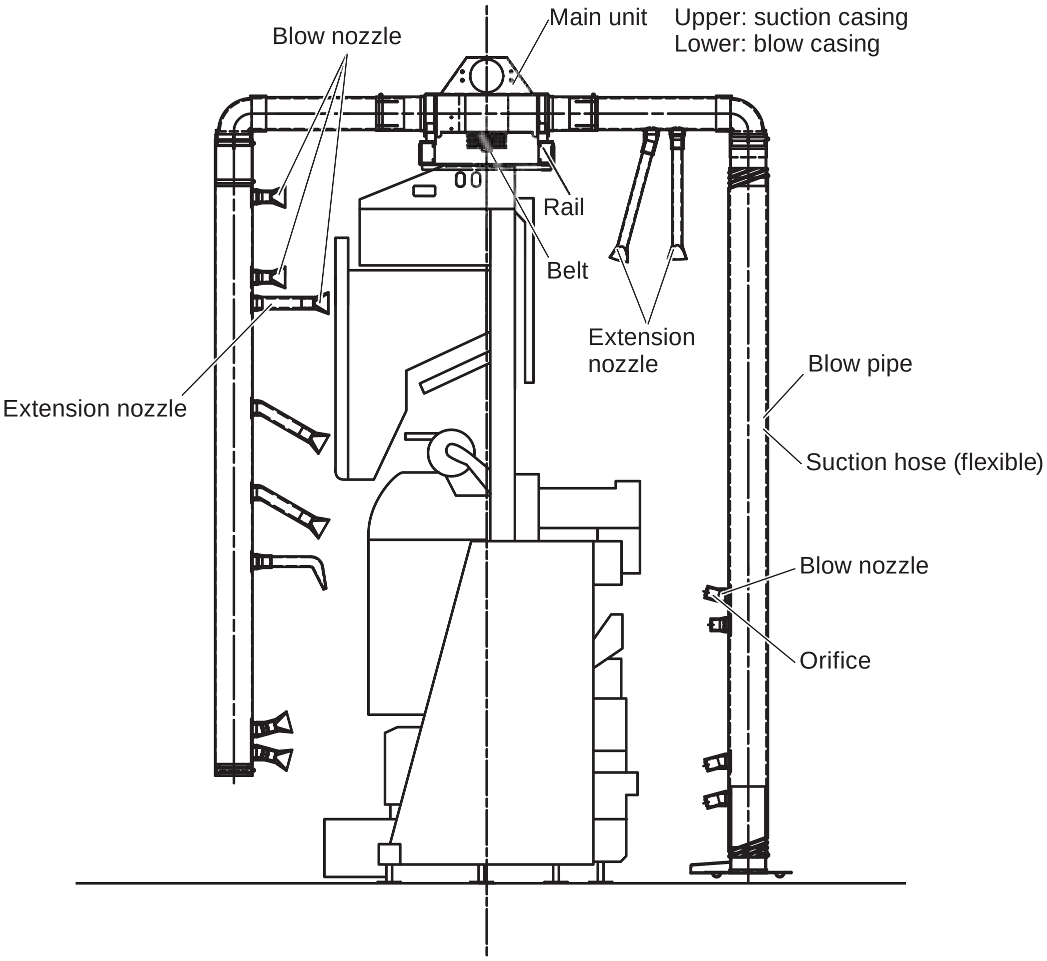
Consists of blow pipe (the blow hose), the blow nozzle, the suction hose, and the suction nozzle.

- **Travelling passage**

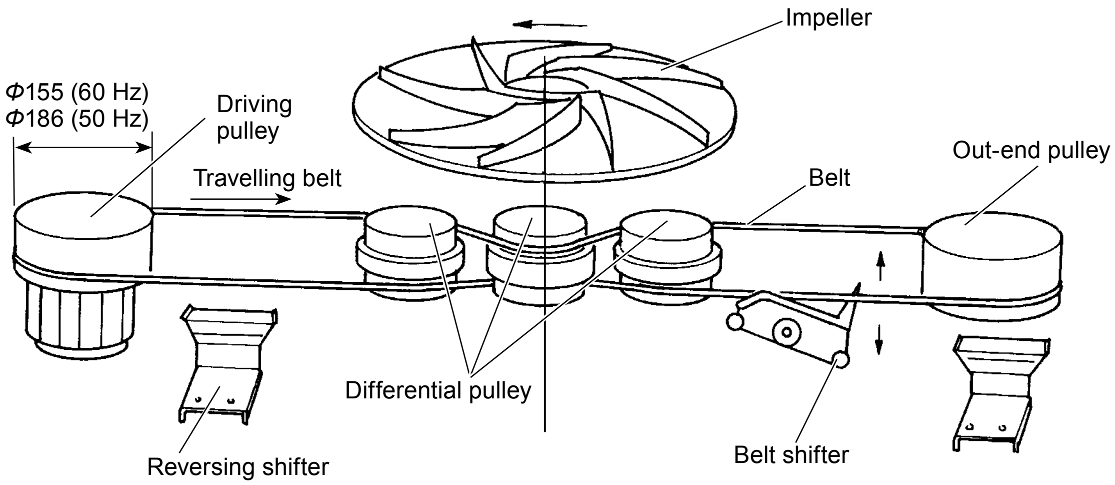
Consists of the drive section, the out-end pulley, the belt, the reversing shifter, and the filter cleaner unit.

- **Cotton fly collector device**

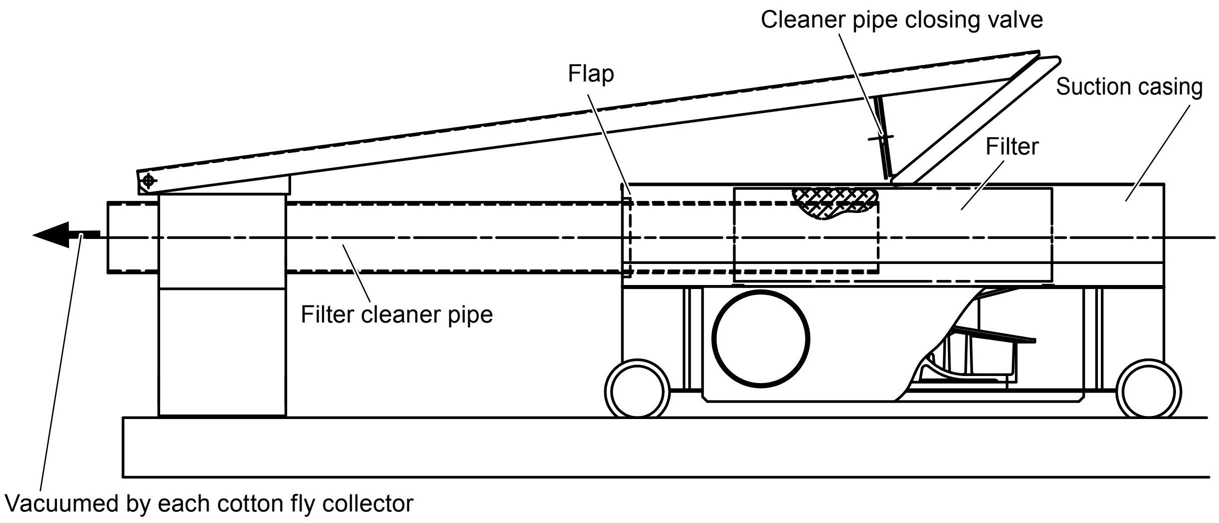
1-2 Illustration of the Structure Surrounding the Blow Cleaner


Blow nozzle
Main unit
Upper: suction casing
Lower: blow casing
Rail
Belt
Extension nozzle
Extension nozzle
Blow pipe
Suction hose (flexible)
Blow nozzle
Orifice

1-3 Driving Mechanism


Impeller
Φ155 (60 Hz)
Φ186 (50 Hz)
Driving pulley
Travelling belt
Belt
Out-end pulley
Differential pulley
Reversing shifter
Belt shifter

1-4 Cotton Fly Collecting Mechanism

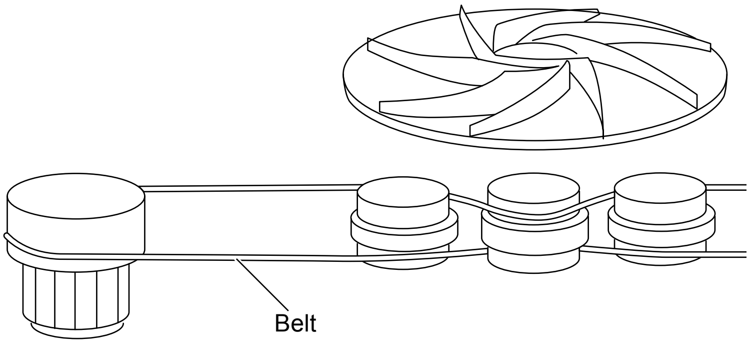

Cleaner pipe closing valve
Flap
Suction casing
Filter
Filter cleaner pipe
Vacuumed by each cotton fly collector

Sec 2 Maintenance

Frequency	Item	Guideline
Regularly	Main units	- Check the impeller pulley, differential pulley, and belt shifter - Ensure that the screws and hose band are tight
	Drive section, out-end section	- Check for any looseness of the screws on the out-end pulley and motor pulley - Check the position of the reversing shifter and for any looseness of its screws - Remove cotton fly from around the motor
	Rails	- Check for any looseness of the bolt nuts on the pillar, the stay and so on - Check for any irregularity on the rail joints
	Pipes	- Check around the pipes - Repair the curve and angle of the blow pipes - Check the nozzles (and replace If any are missing)
	Belts	Check for any peeling and damage of the bonded parts and the belts
	Bearings (bearing with a seal)	Check for the motor shaft, out-end pulley, impeller pulley, differential pulley, and wheels. * Since all fast-rotating parts use bearings, daily oil replenishment is not required.
Monthly	Filter	Because the filter filters cotton and other dusts, it becomes soiled and clogged after being used for a long period. Please check the condition of filter soiling periodically after the machine is installed and determine the appropriate cycle for replacement and cleaning. (In practical terms, the cycle differs completely, depending on the types of yarn and fiber used, the operating conditions and so on, so please determine based on your experience.) **● Replacement and Cleaning** **1.Prepare a spare filter.** **2.After replacement, wash the filter removed with water and mild detergent, and allow to dry naturally.** * Since the condition of the filter significantly affects the performance of the blow cleaner, early replacement is necessary
Every 6 months	Pipes	- Check, disassemble and clean the pipes (primarily the blow pipe) - Cotton fly accumulates on the upper side of the blow pipe and the pipe joints. Carefully remove the fly without damaging the blow - Remove the cotton fly from the suction hose in the same way
	Main unit area	Disassemble the main unit casing and clean out any contaminating cotton fly, cotton dust and so on from inside

Sec 3 Consumables

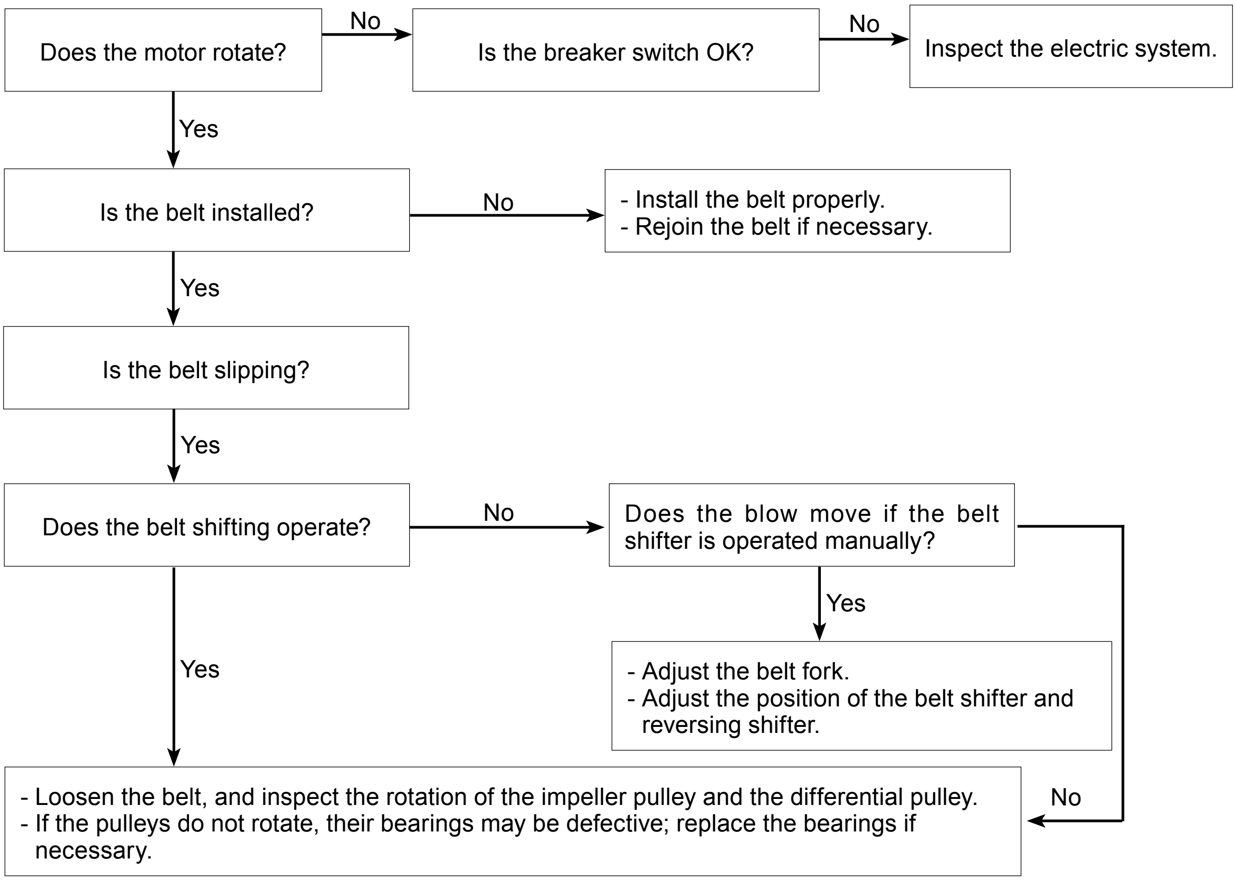
If the parts below are worn causing a failure or problem, replace the worn part or parts with a new one.



Sec 4 Troubleshooting

When the problem below occurs, please perform the following check.

4-1 The Blow Cleaner Does Not Move


Does the motor rotate?

Is the breaker switch OK?

Inspect the electric system.

Is the belt installed?

- Install the belt properly.
- Rejoin the belt if necessary.

Is the belt slipping?

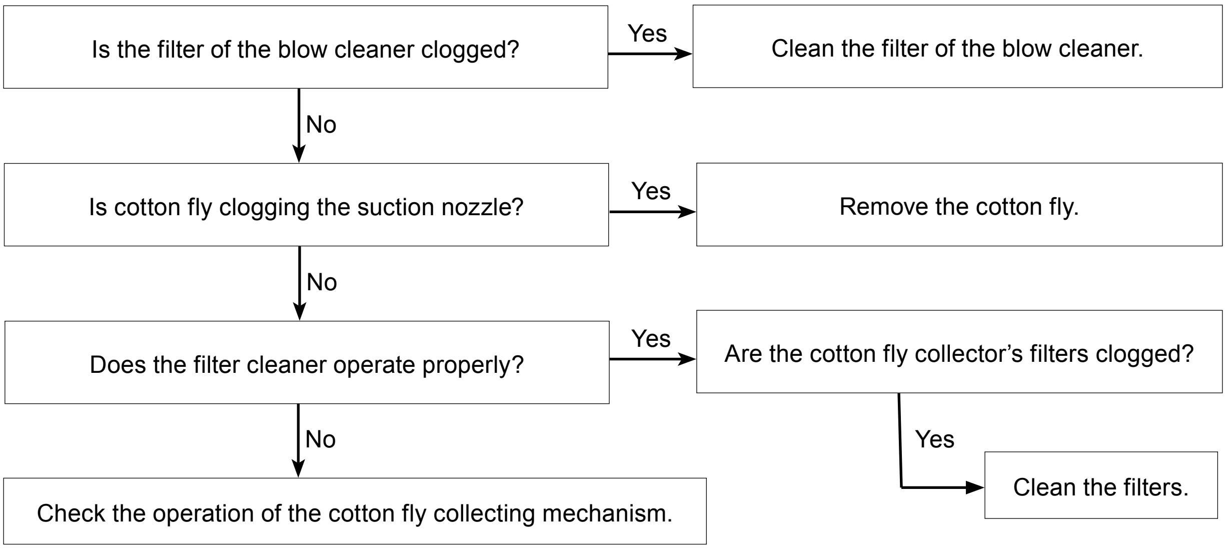
Does the belt shifting operate?

Does the blow move if the belt shifter is operated manually?

- Adjust the belt fork.
- Adjust the position of the belt shifter and reversing shifter.

- Loosen the belt, and inspect the rotation of the impeller pulley and the differential pulley.
- If the pulleys do not rotate, their bearings may be defective; replace the bearings if necessary.

4-2 The Suction Is Weak When the Blowing Pressure Decreases


Is the filter of the blow cleaner clogged?

Clean the filter of the blow cleaner.

Is cotton fly clogging the suction nozzle?

Remove the cotton fly.

Does the filter cleaner operate properly?

Are the cotton fly collector’s filters clogged?

Clean the filters.

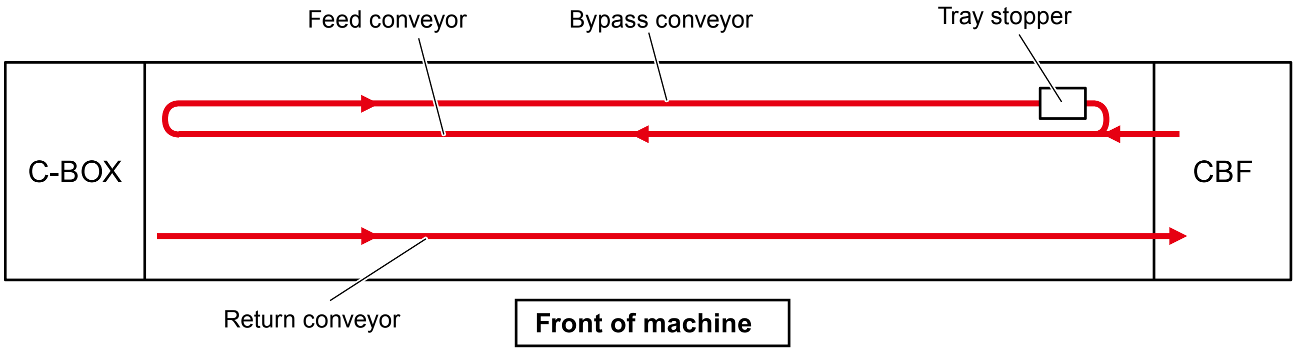
Check the operation of the cotton fly collecting mechanism.

Tray Conveyor

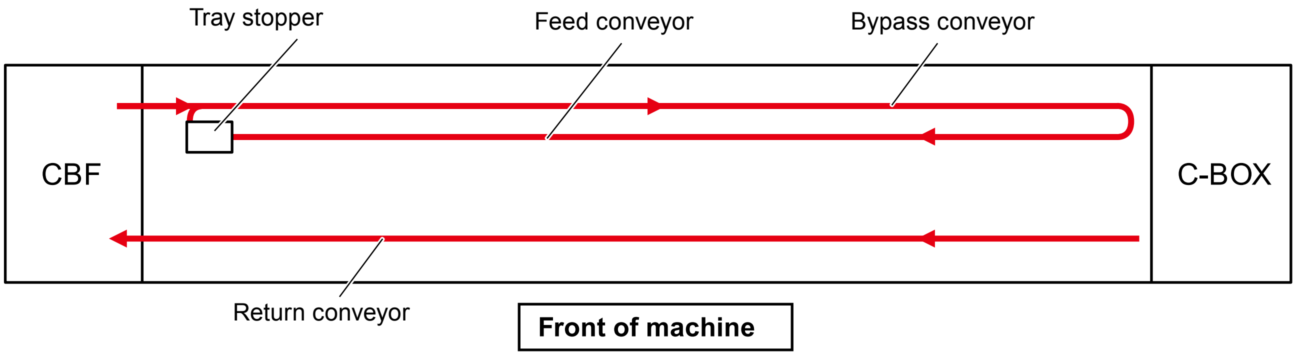
Direction of Flow for Tray

- **1 yarn type: Cop-Robo x 1**

- L machine specification

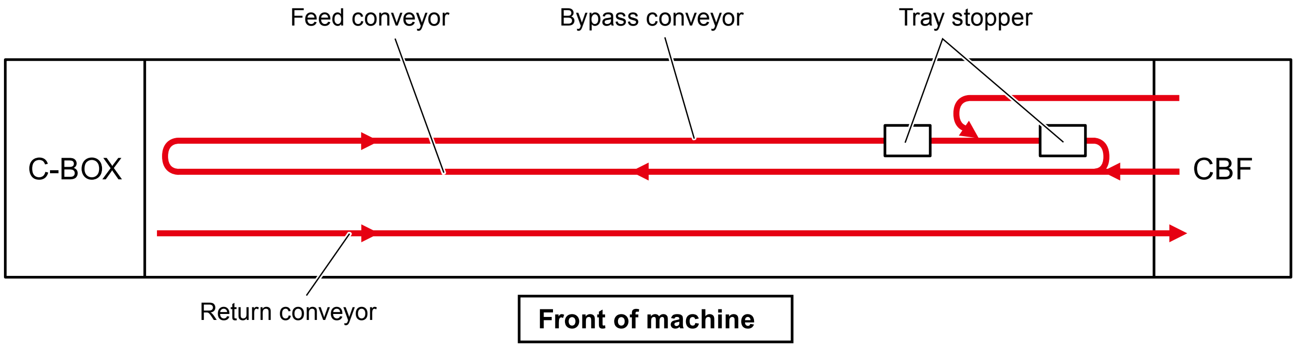

Feed conveyor
Bypass conveyor
Tray stopper
C-BOX
CBF
Return conveyor
Front of machine

- R machine specification

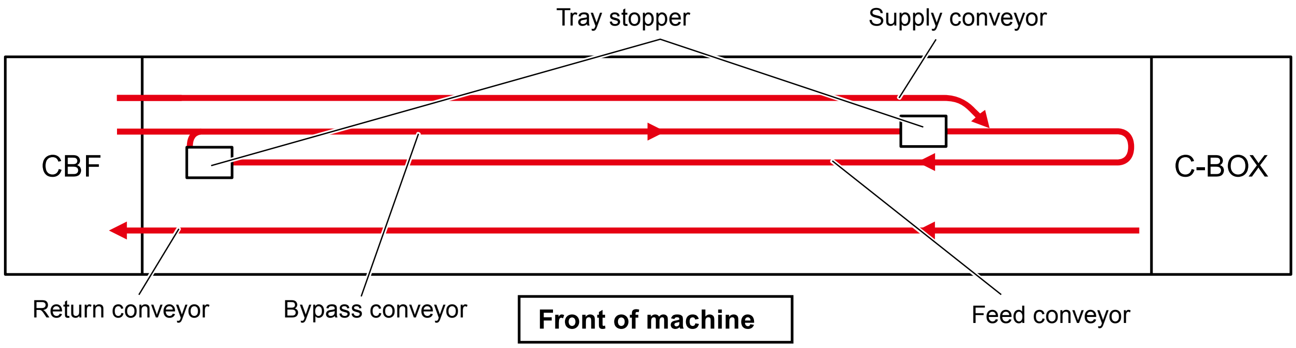

Tray stopper
Feed conveyor
Bypass conveyor
CBF
C-BOX
Return conveyor
Front of machine

- **1 yarn type: Cop-Robo x 2**

- L machine specification

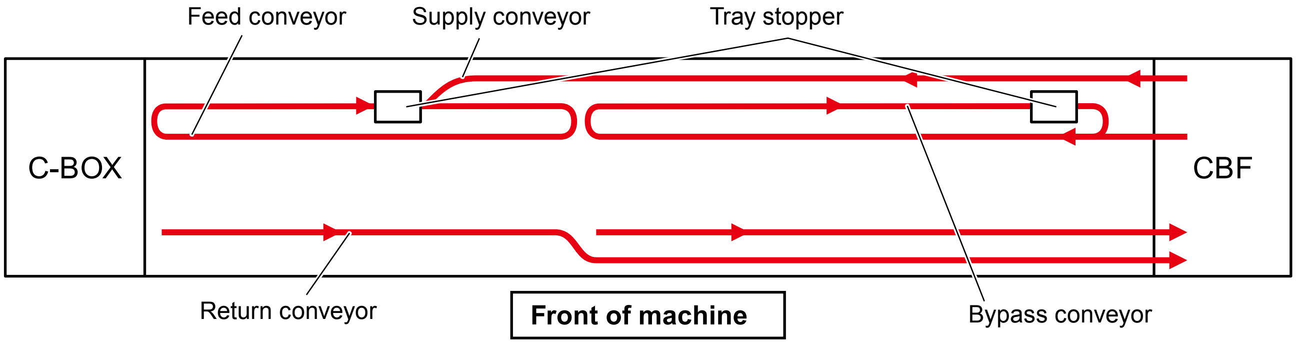

Feed conveyor
Bypass conveyor
Tray stopper
C-BOX
CBF
Return conveyor
Front of machine

- R machine specification

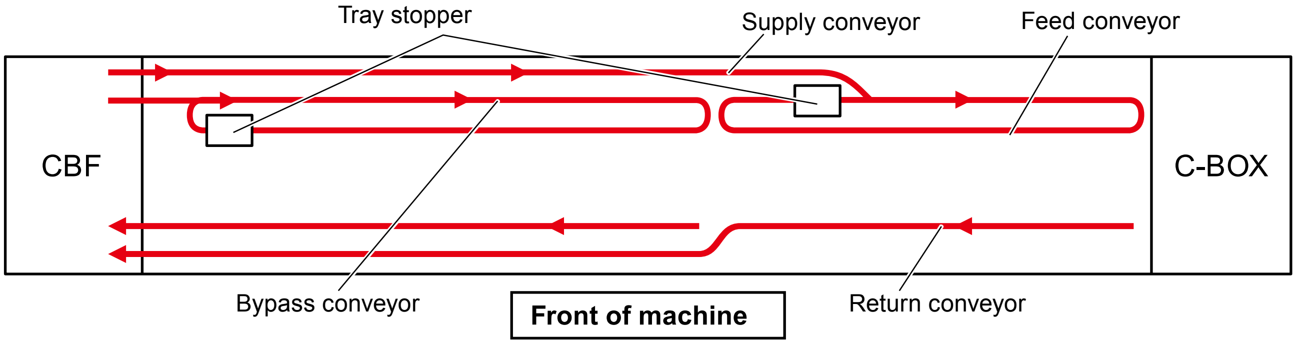

Tray stopper
Supply conveyor
CBF
C-BOX
Return conveyor
Bypass conveyor
Front of machine
Feed conveyor

- **2 yarn type: Cop-Robo x 2**

- L machine specification

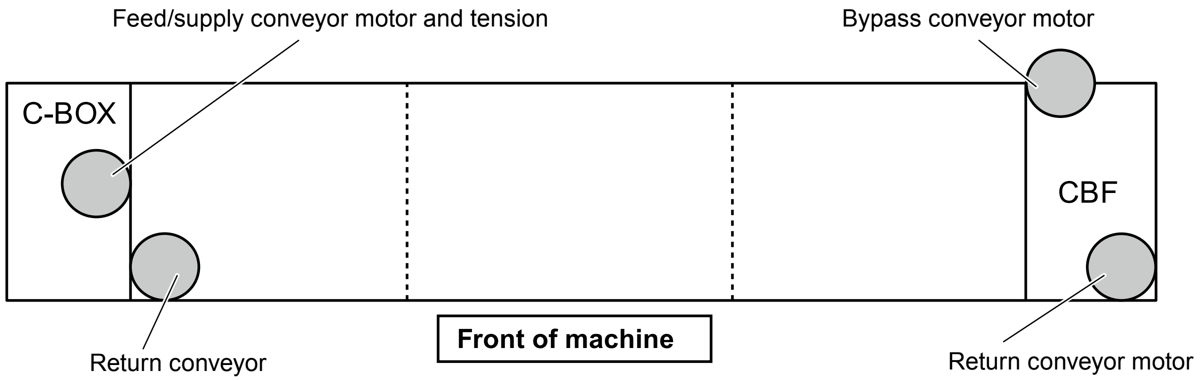

Feed conveyor
Supply conveyor
Tray stopper
C-BOX
CBF
Return conveyor
Front of machine
Bypass conveyor

- R machine specification

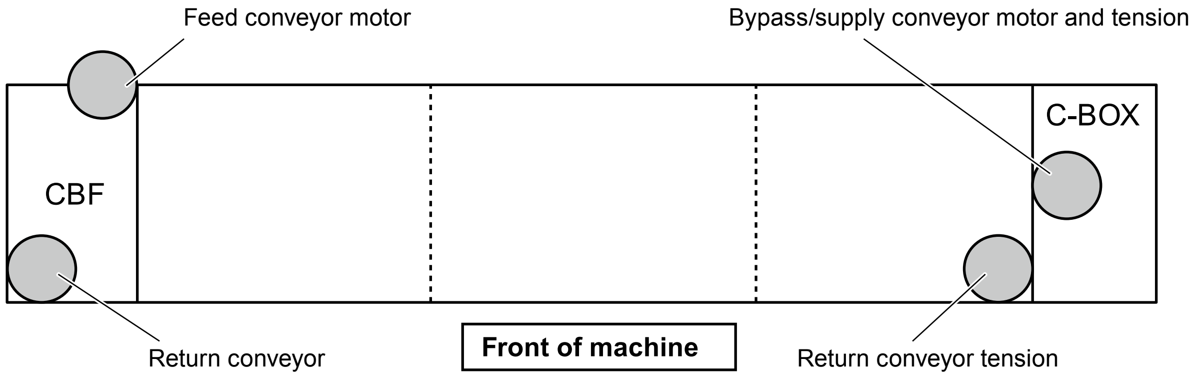

Tray stopper
Supply conveyor
Feed conveyor
CBF
C-BOX
Bypass conveyor
Front of machine
Return conveyor

Location of Conveyor Motor & Tension Device

- L machine specification


Feed/supply conveyor motor and tension
Bypass conveyor motor
C-BOX
CBF
Return conveyor
Front of machine
Return conveyor motor

- R machine specification


Feed conveyor motor
Bypass/supply conveyor motor and tension
CBF
C-BOX
Return conveyor
Front of machine
Return conveyor tension

Sec 1 Adjustment Standard

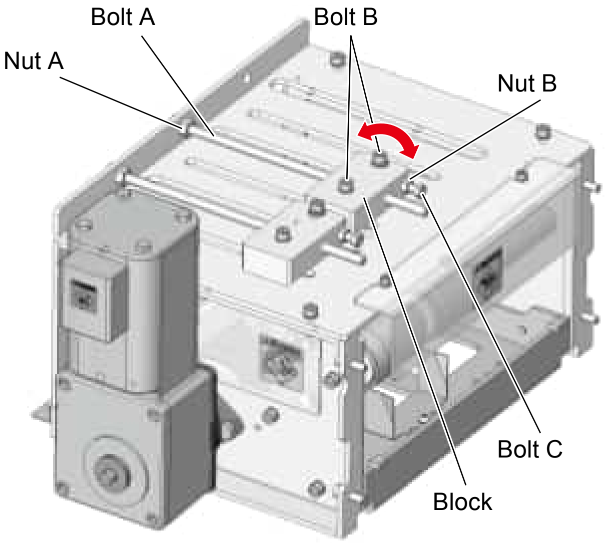
1-1 Conveyor Belt

The standard tension for the conveyor belt (feed conveyor and return conveyor) is 0.5%.
Adjust the belt so that it does not slip during machine operation.

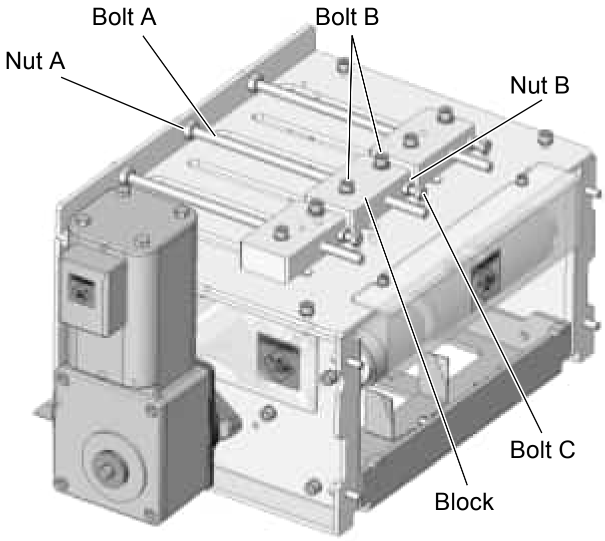
1-2 Feed/Bypass/Supply Conveyor Tension Device

Refer to Chapter 5Fa, Pre for details on the location of the tension device for the feed/bypass/supply conveyor.

- **Cop-Robo x 1**



- **Cop-Robo x 2**



Tension Adjustment

Loosen nut A and bolt B, and adjust the tension using bolt A.
Refer to the tension marks on the belt to adjust the tension.

Belt Alignment

Loosen nut B, and adjust using bolt C.
When adjusting, the block moves so that you can adjust the alignment.

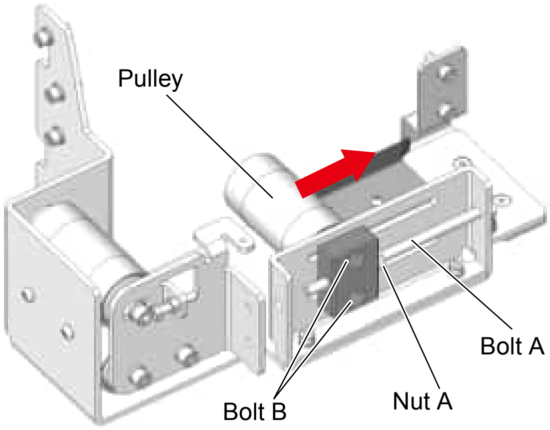
1-3 Return Conveyor Tension Device

Refer to Chapter 5Fa, Pre for details on the location of the tension device for the return conveyor

Tension Adjustment

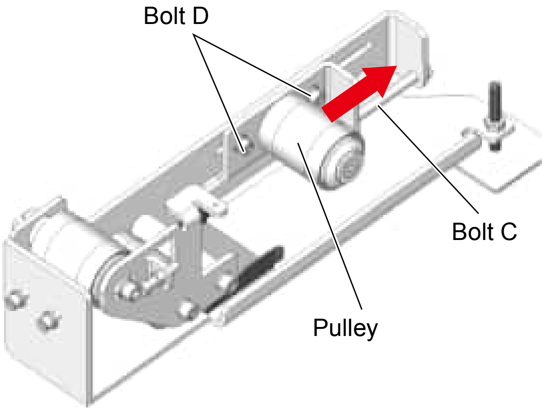
- **For 1 & 2 yarn type**

Slightly loosen bolts B, and loosen nut A.
When adjusting bolt A, the pulley moves so that you can adjust the tension.



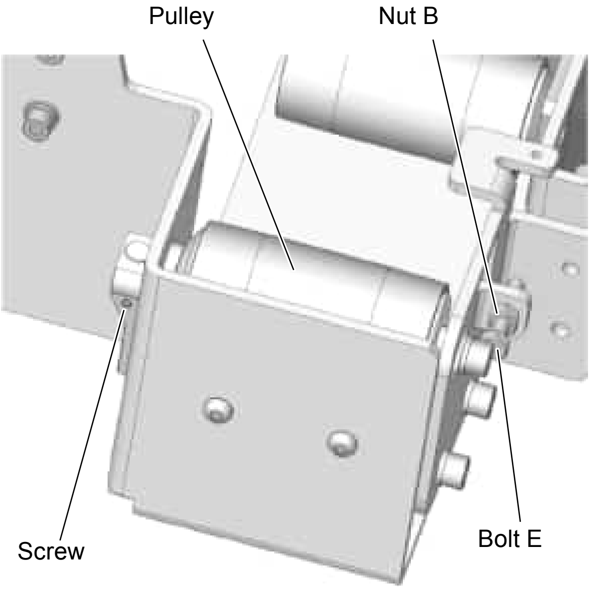
- **For 2 yarn type**

When you adjust bolt C, after bolts D are loosened, the pulley moves so that you can adjust the tension.



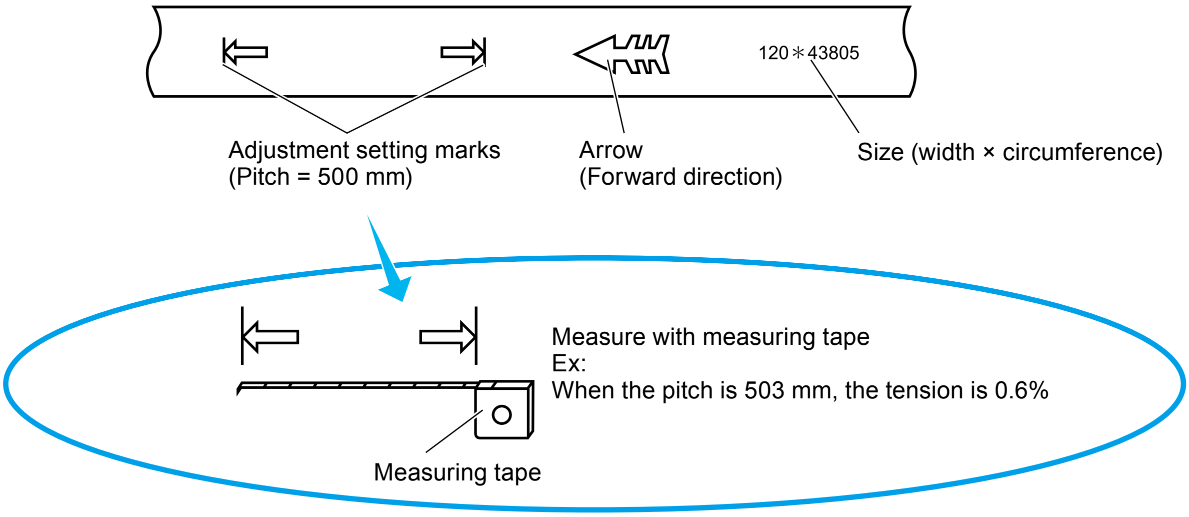
Belt Alignment

After the screw and nut B are loosened, when you adjust bolt E, the pulley moves so that you can adjust the alignment.
The procedure is the same for the “1 & 2 yarn type” and for the “2 yarn type.”



Display Markings on the Belt

The adjustment setting marks, the forward direction arrow and the size of the belt are displayed on the belt surface.

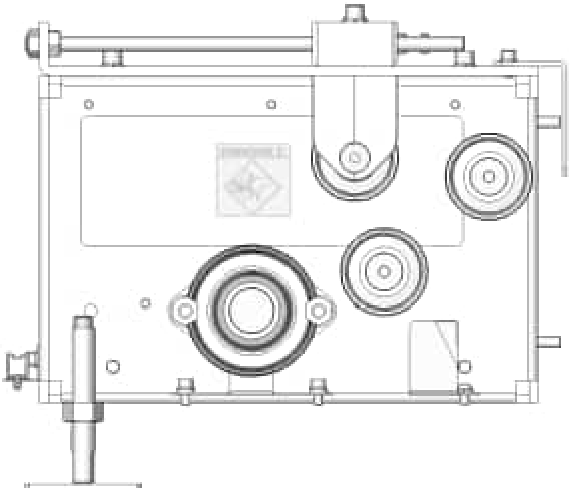

120∗43805
Adjustment setting marks
(Pitch = 500 mm)
Arrow
(Forward direction)
Size (width × circumference)
Measuring tape

Measure with measuring tape
Ex:
When the pitch is 503 mm, the tension is 0.6%

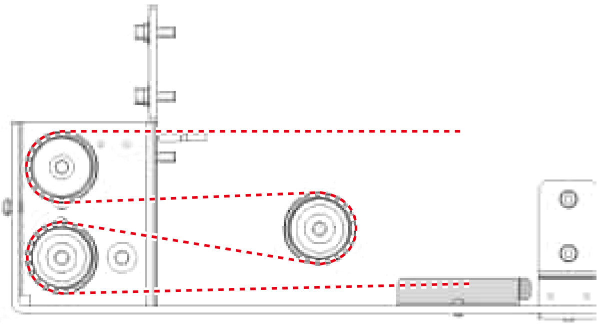
1-4 Conveyor Belt

Attach the belt as illustrated below.

- **Feed/bypass/supply conveyor**

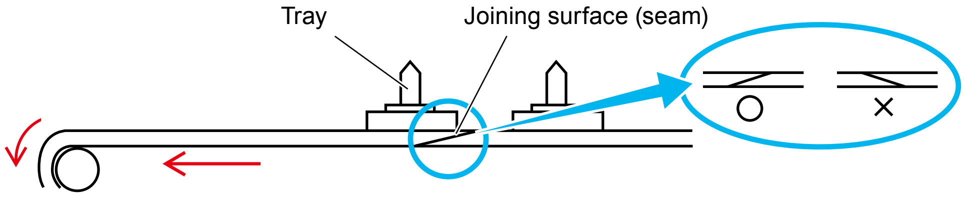


- **Return conveyor**



CAUTION

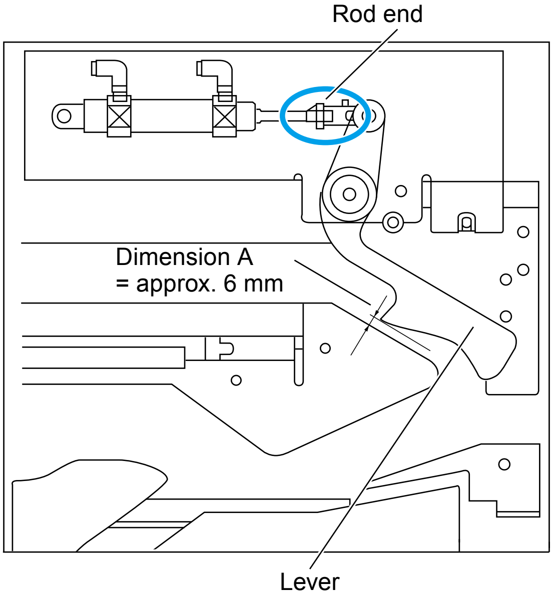
Refer to the forward direction arrow marked on the belt to ensure that the movement or direction is correct.
If the belt is set up backwards, the belt may tear apart. (The joining surface is reversed)


Tray
Joining surface (seam)
○
×

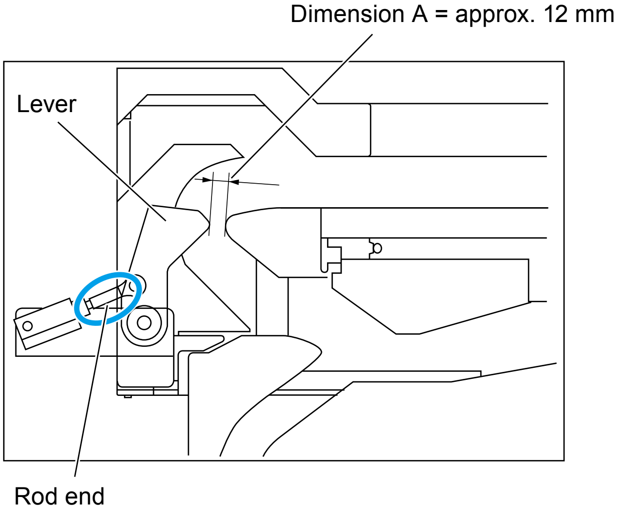
1-5 Tray Stopper

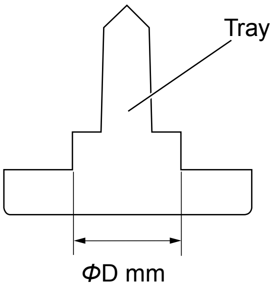
The tray stopper function is to prevent the tray from jamming. Refer to Chapter 5Fa, Pre for details on the location of the tray stopper.

- **L machine: Out-end side**


Rod end
Dimension A
= approx. 6 mm
Lever

- **R machine: Out-end side**

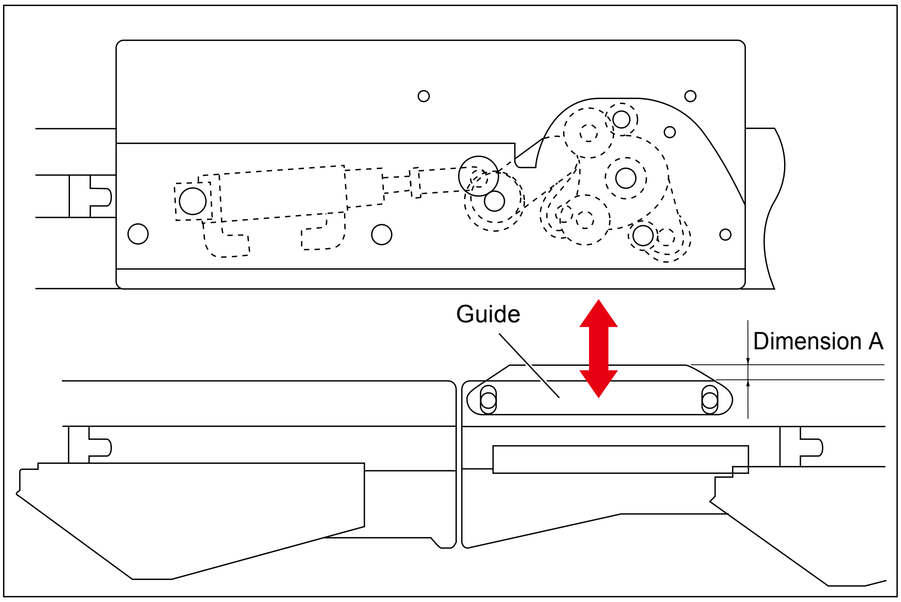

Dimension A = approx. 12 mm
Lever
Rod end



Junction

Adjusting dimension A depends on the size of the tray (ΦD mm) by moving the guide.

ΦD (mm)	Dimension A (mm)
Φ28	7
Φ36	3


Guide
Dimension A

1-6 VOS Settings

The VOS settings are listed below. Change the setting conditions when necessary.

Tray Level	Set the required time

Sec 2 Maintenance

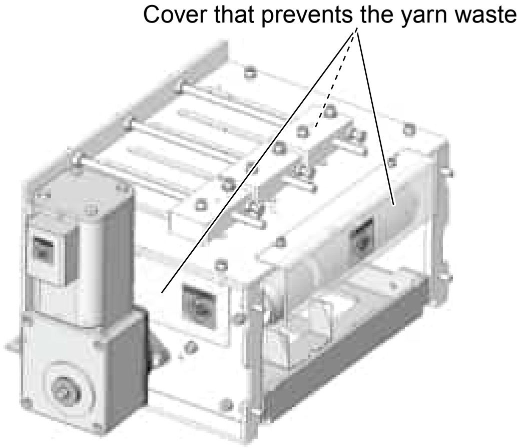
Any yarn waste or cotton fly that builds up leads to motor damage and belt cracking.

Frequency	Item	Guideline
As necessary	Conveyor brush	Clean conveyor brush
	Between frame spans	Using an air gun, clean the cotton fly caught on the joints between the frames
Weekly	Pulley	Clean the yarn waste around the pulley

2-1 Pulley

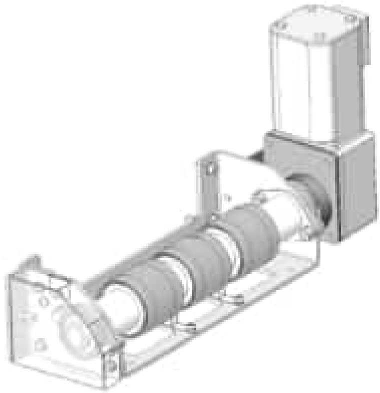
- **Pulley on feed/bypass/supply conveyor (drive-end side)**

Remove the covers (located in 3 places) that prevent the yarn waste from getting caught in the pulley and clean the yarn waste around the pulley.



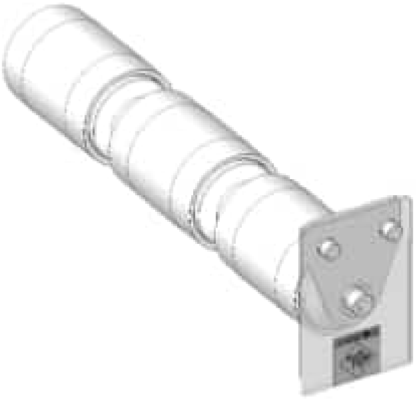
- **Pulley on feed/bypass conveyor (out-end side)**

Remove the CBF guide, and clean the yarn waste around the pulley.

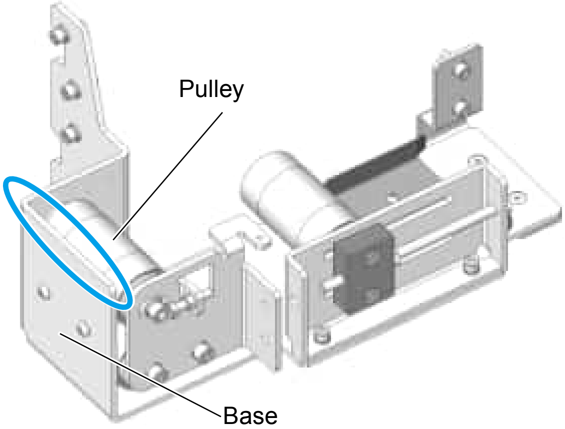


- **Pulley under feed conveyor frame**

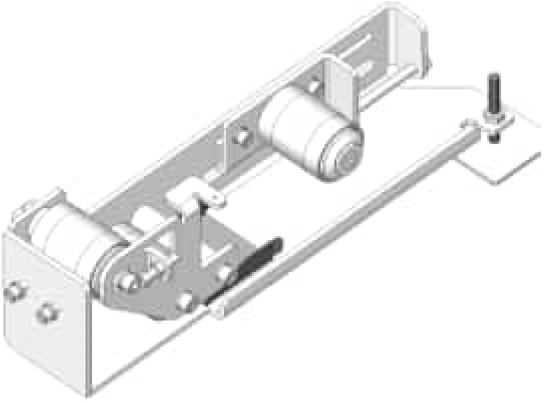
Clean the yarn waste stuck in between the pulleys (two sections).



- **Return conveyor tension (1 & 2 yarn type)**



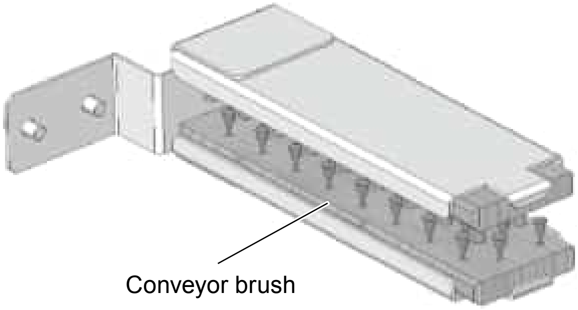
- **Return conveyor tension (for 2 yarn type)**



Remove the return conveyor guide on the front, and clean the yarn waste around the pulleys.
Check whether there are any obstructions stuck between the pulley and the base on the return conveyor tension section for the 1 & 2 yarn type.
Any obstructions may cause the belt to crack or slip during operation.

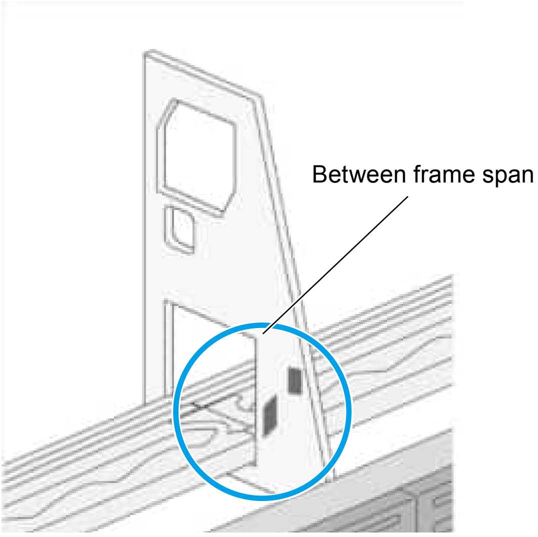
2-2 Conveyor Brush

Clean the two conveyor brushes on the feed conveyor (1 location) and on the return conveyor (1 location).



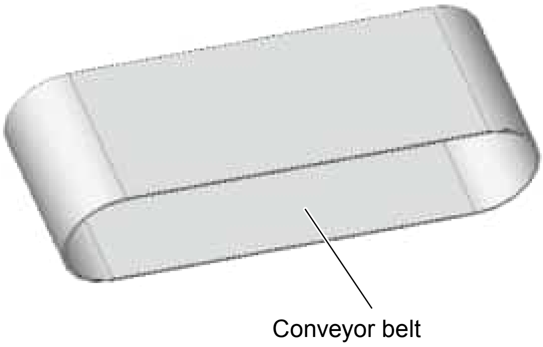
2-3 Between Frame Span

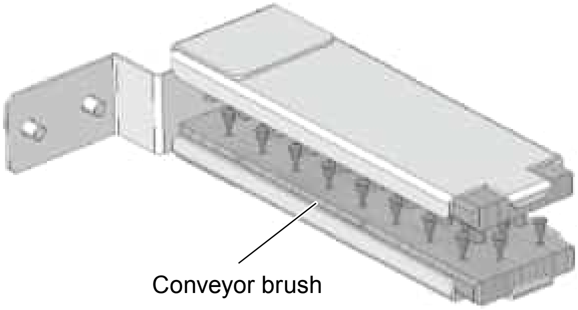
When cotton fly builds up in between the conveyor frame and the belt, and on the joints between the frames, remove it with an air gun or other tool.



Sec 3 Consumables

If the parts below are worn causing a failure or problem, replace the worn part or parts with a new one.


Conveyor belt


Conveyor brush

Electrical Parts

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6
Chapter

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Sec 1 Troubleshooting

1-1 Winding Unit Alarms

Alarm Recovery Method

- **Package alarms**

Alarm LED	Upper level light on
Status display	P*

* After checking the conditions of the end of the yarn on a package, press the illuminated reset switch (upper level).

- **Bobbin alarms**

Alarm LED	Lower level light on
Status display	b*

* After checking the conditions of the bobbins, press the illuminated reset switch (lower level).

- **Other alarms**

Alarm LED	Mid-level light on
Status display	Other displays

* If the alarm continues to sound, clear it by following the clearing procedure from the VOS screen.

Alarm Type & Description

Status Display	Alarm Type	Cause
01	Compiling Error	Program fault
02	Calculation Error	Program fault
03	Calculation Error (latch)	Program fault
04	Sequence Arithmetic Stop Error	Program fault
05	Carrying Error	Program fault
11	DISPLAY PCB Alarm	DISPLAY PCB error
12	SPLICER PCB Alarm	SPLICER PCB error
13	MIDDLE PCB Alarm	MIDDLE PCB error
14	BALCON PCB Alarm	BALCON PCB error
15	M/G CAN PCB Alarm	M/G CAN PCB error
60	DRUM BLD: Communication Timeout Between SPC	Communication error with UNIT-SPC
61	DRUM BLD: CPU Error	CPU error
62	DRUM BLD: Low Voltage	Low voltage
63	DRUM BLD: High Voltage	High voltage
64	DRUM BLD: Drum Sensor Error	Drum sensor input error
65	DRUM BLD: CS Sensor Error	CS sensor input error
66	DRUM BLD: Speed Deviation	Speed Deviation
67	DRUM BLD: Motor Overheat Protection (Thermistor)	Motor temperature high
68	DRUM BLD: Overload (Thermal)	Overload occurred
69	---	---

Status Display	Alarm Type	Cause
6A	DRUM BLD: IPM Fault	IPM fault
6b	DRUM BLD: CS Sensor Input Error	CS sensor input error
6C	DRUM BLD: CS Sensor Reverse Rotation Error	Drum rotated in reverse
6d	DRUM BLD: IPM Temperature Error	High IPM temperature, abnormal value
90	Air heater overheat alarm	Overheating error on air heater
91	Air heater disconnect alarm	Air heater is disconnected
92	Air heater temperature fluctuation alarm	Air temperature is fluctuating excessively from the set temperature
93	Temperature sensor disconnect alarm	Sensor that monitors the heater temperature is damaged or disconnected
94	Temperature control PCB communication alarm	Communication error between UNIT SPC and HOT SPLICER controller
95	CPU error on temperature control PCB	CPU error occurred on temperature control PCB
A1	Yarn Threading Error (system)	Yarn threading error Yarn break occurred right after drum start
A2	Yarn Threading Error (AD)	AD error
A3	Take-up Tube Supply Error	Take-up tube not ready
A4	Rear Package Not Processed	Doffing operation not possible due to package at rear
b0	Bobbin Supply Error	No bobbin supplied
b1	Lower Yarn Pickup Error	Lower yarn pickup error
b2	---	---
b3	Start Up Cut Alarm	Clearer cut occurs frequently
b4	---	---
b5	Yarn Count Alarm (UQC) Yarn Count Alarm (iQON) Yarn Count Alarm (YM) Yarn Count Alarm (KC)	---
b6	Pearl Chain Alarm (UQC) Pearl Chain Alarm (iQON) CLUSTER Alarm (YM) IPM Alarm (KC)	---
b7	Moire Alarm (UQC) Moire Alarm (iQON)	---
b8	CV Alarm (UQC) CV Alarm (iQON) CV Alarm (KC)	---
b9	Foreign Fiber Alarm (UQC) Foreign Fiber Alarm (iQON) Foreign Fiber Alarm (YM) DM Alarm (KC)	---
bA	Hairiness Alarm (UQC) Hairiness Alarm (iQON) SFI Alarm (YM)	---
bb	IPI Alarm (UQC) IPI Alarm (iQON)	---
bC	CMT Alarm (UQC) CMT Alarm (iQON)	---
bd	YF Alarm (UQC) YF Alarm (iQON)	---
bE	MFAlarm (UQC) MFAlarm (iQON) FF CLUSTERAlarm (YM)	---
bF	Other Alarms	---
bG	PPAlarm (UQC) PPAlarm (iQON) PAlarm (YM)	---

Status Display	Alarm Type	Cause
C0	Clearer Zero Adjustment Alarm	Clearer zero adjusting error
C1	Clearer Slot Jammed Alarm	Yarn waste clog in clearer slot
C2	Insufficient Cut Alarm	Clearer did not cut sufficiently
C3	Clearer Technical Alarm	Clearer technical alarm occurred * Refer to clearer alarm screen.
d1	Drum Wrapping Alarm	Drum wrapping occurred
E1	Splicer Home Position Sensor Alarm	Splicer operation error Splicer home position sensor alarm
E2	---	---
E3	Bal-Con Sensor Alarm Bobbin Sensor Alarm Package Diameter Detection Sensor Alarm	Bobbin (package) detection sensor error
E4	---	---
E5	---	---
E6	Package Rotating Sensor Alarm	Package rotating sensor error
E7	Retie Pipe Home Position Sensor Alarm	Retie pipe operation error Retie pipe home position sensor error
E8	PLC21 Alarm	PLC21 yarn travel detection error * Dirty receiver and transmitter windows, etc.
E9	Lower Yarn Sensor Alarm	Lower yarn sensor error * Dirty receiver and transmitter windows, etc.
EA	PC Sensor Alarm	PC sensor error Tension error detected
Eb	---	---
EC	Drum Lapping Detection Sensor Alarm	Drum lapping or winding detection sensor error
Ed	Traverse Sensor Alarm	Traverse sensor error
EE	Waste Yarn Detection Sensor Alarm	Waste yarn detection sensor error
EF	Tensor Operation Check Sensor Alarm	Tensor opener operation error Tensor operation check sensor error
EG	Suction Mouth Angle Sensor Alarm	Shutter mouth operation error Suction mouth angle sensor error
EH	Shutter Home Position Sensor Alarm	Shutter operation error Shutter home position sensor error
EJ	Bal-Con Home Position Sensor Alarm	Bal-Con operation error Bal-Con home position sensor error
EL	Peg Home Position Sensor Alarm Tray Eject Home Position Sensor Alarm	Peg operation error Peg home position sensor error Tray eject operation error Tray eject home position sensor error
En	Magazine Can Position Sensor Alarm	Magazine can operation error Magazine can home position sensor error
Eo	Yarn Guide Lever Home Position sensor Alarm	Yarn guide lever operation error Yarn guide lever home position sensor error

Status Display	Alarm Type	Cause
n1	Bal-Con Down Alarm	Bobbin detection sensor is left ON after drum start
n2	Bal-Con Up Alarm	Bal-Con up error
o1	Unconsumed Wax Alarm	Wax application failure
o2	No Wax Alarm	No wax
P1	Upper Yarn End Find Error	---
P2	Upper Double Yarn Alarm	Double yarn detected during upper yarn end find operation
P3	Sizing Alarm	Package diameter exceeds the specified value
P4	Package Brake Error	Package does not stop within specified time
P5	PJC Alarm (upper limit)	Too many yarn breaks/packages
P6	PJC Alarm (lower limit)	Too few yarn breaks/packages
P7	Package Half-locked Alarm	Bad package rotation occurred
r0	R/W module communication alarm	Communication error between UNIT SPC and R/W module
r1	Tag communication alarm	R/W module can't communicate with tag on tray
S1	Mis-splicing	---
S2	Splicer Cut	---
S3	Air Heater Temperature Change	Air heater is out of range for set temperature
Γ1	Tension Break Alarm	Frequent breaks in tension
Γ2	Traverse Error	Traverse error detected
Γ3	Tension Error (LOW)	Tension error (LOW) detected * Tensor is off, etc
Γ4	Tension Error (HIGH)	Tension error (HIGH) detected
u1	DC5V Power Supply Error	Line voltage error detected on DC5V power supply
u2	DC15V Power Supply Error	Line voltage error detected on DC15V power supply
u3	DC24V Power Supply Error	Line voltage error detected on DC24V power supply

1-2 Main Machine Alarm

Main Machine Fixer Call

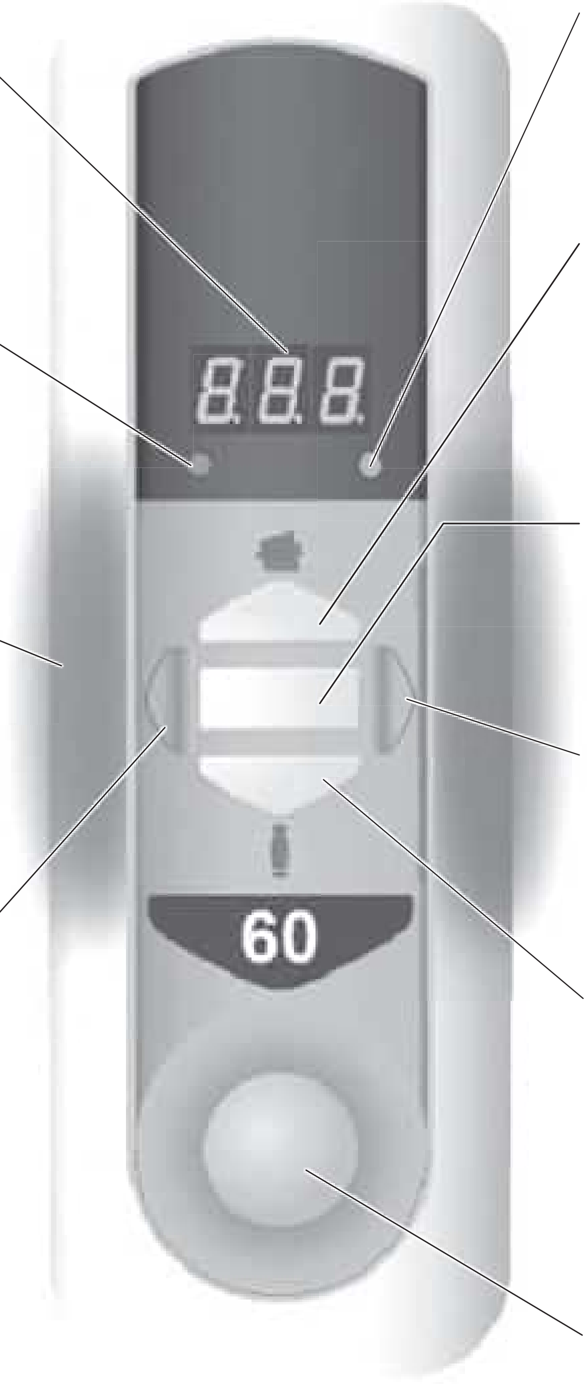
Classification	Alarm Type	Signal Tower		Rotation Signal Warning		Machine Status	Cause
		Red	Yellow	Red	Yellow		
Machine	Emergency Stop	Flashing		Lit		Machine operation stopped	Emergency stop switch pressed
	Emergency Stop (Wire switch)						Wire switch is pulled
	Communication Error	Flashing (High speed)				Machine operation continued	Communication error occurred between devices inside machine
	Momentary Outage, or Blower Outage	Flashing				Machine operation stopped	Momentary outage or power outage occurred
	Air Down						Main air pressure low
Main control box	DC24V Input Power Alarm	Flashing				Machine operation stopped	Input fuse break (Main fiber SPC, expanded PCB or interface PCB)
	DC24V Output Power Alarm						Output fuse break (Main fiber SPC, expanded PCB or interface PCB)
	Blower Inverter Alarm						Blower inverter alarm occurred
	Conveyor, Blow Cleaner Trip						Motor breaker trip on conveyor or blow cleaner
	Dust Collector Thermal Trip						Motor breaker trip on dust collector
	Control Panel Overheat Alarm					Machine operation continued	High temperature inside control box, exceeds constant temperature level
	Cooling Fan Alarm						Cooling fan overheating
Blow cleaner	Blow Cleaner Travel Error Alarm	Flashing				Blow cleaner operation stopped	Blow cleaner travel error
Bobbin conveyor	Empty Conveyor Clog Detection	Flashing				Bobbin conveyor operation stopped	Empty conveyor clog occurred

Classification	Alarm Type	Signal Tower		Rotation signal warning		Machine Status	Cause
		Red	Yellow	Red	Yellow		
Water splicer	Water Tank Level Alarm	Flashing				Unit yarn splicing stop	Empty water tank
	Water Tank Pressure Down Alarm						Low water tank pressure
	Water Pipe Residual Air Alarm						Air bubbles present inside water pipe
AC/DC converter	Converter Error	Flashing				Operation stopped	Converter error
	Converter Communication Error					Operation continued	Converter communication error
	Converter CPU Error					Operation stopped	Converter CPU error
	Converter Output Short Error						Converter output short error
	Converter DB Circuit Error						Error occurred on regenerative circuit for converter
	Converter FET Damage						FET element damage inside converter
	Converter DB Resistor Overheat Error						Overheating error occurred on regenerative resistor for converter
	Converter DB Resistor Protection						Protective function on regenerative resistor for converter enabled
	Converter DB Resistor Break Detection						Break detected on regenerative resistor for converter
	Converter Output Voltage Error						Converter output voltage error
Span slave	Span Slave Output Short Error	Flashing				Machine operation stopped	Span slave output short error
	Span Slave Communication Error					Operation continued	Span slave communication error
Package conveyor	Package Conveyor Alarm		Flashing (High speed)			Operation continued	Package left unattended for extended period of time on package conveyor

Sec 2 Winding Unit

2-1 Layout of Electrical Equipment

Operation & Display Parts



Status display
(Alarm code display)
(Used for maintenance
functions)

Maintenance LED (Green)
(Used for maintenance
functions)

Operator call LED (Red)
(Lights up during alarm)

Operator call LED (Blue)
(Lights up when package
is full and flashes for full
package warning)

Maintenance button (Left)
(Used for maintenance
functions)

Maintenance LED (Red)
(Used for maintenance
functions)

Alarm reset button (Up)
(Alarm reset)
(Yarn threading operation)

Alarm LED (Up)
(Lights up and flashes during
package alarm)

Alarm rest button (Center)
(Alarm reset)

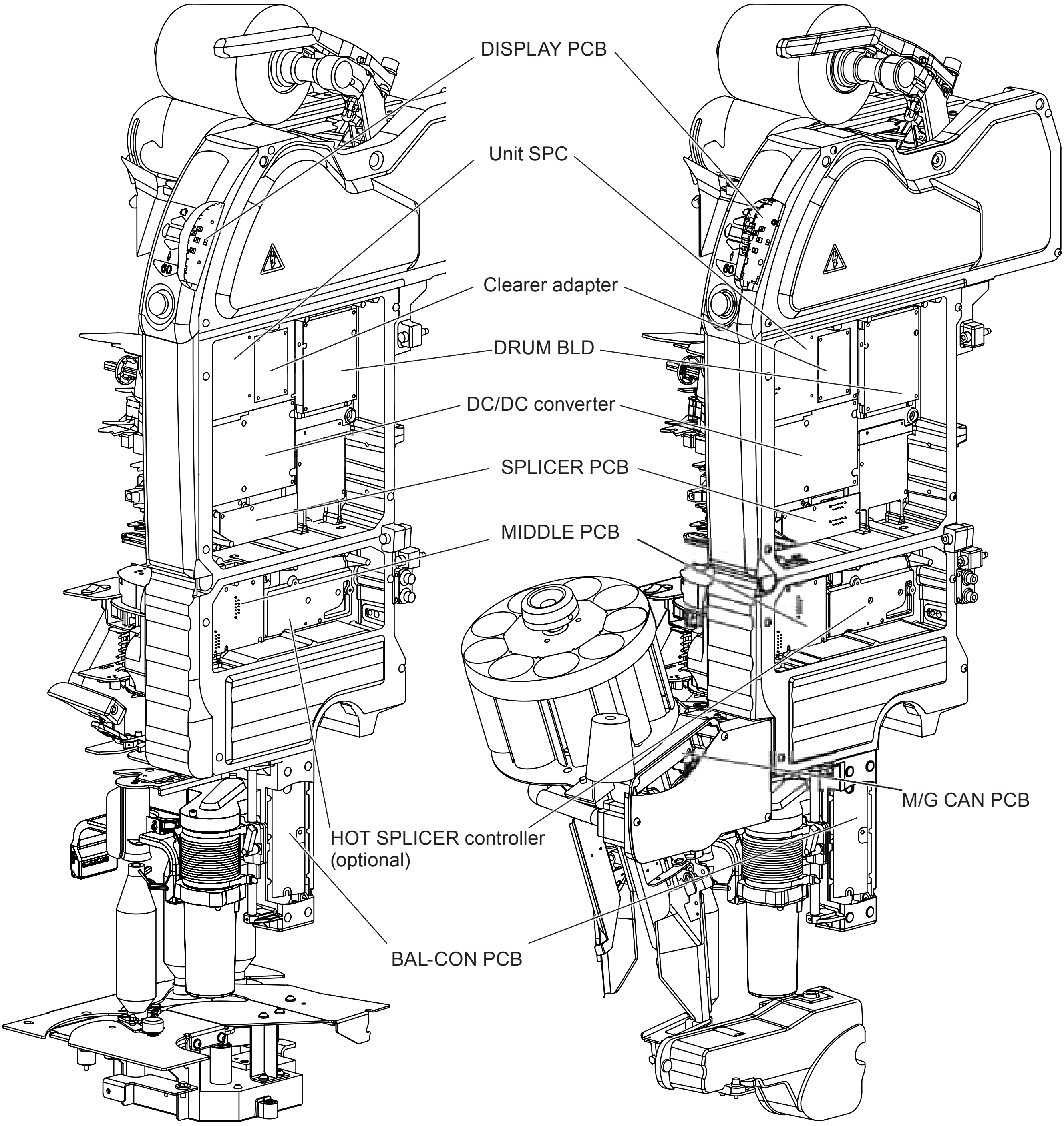
AlarmLED (Center)
(Lights up and flashes during
bobbin alarm)

Maintenance button (Right)
(Used for maintenance
functions)

Alarm rest button (Down)
(Alarm rest)
(Forced bobbin ejection)

Alarm LED (Down)
(Lights up and flashes during
bobbin alarm)

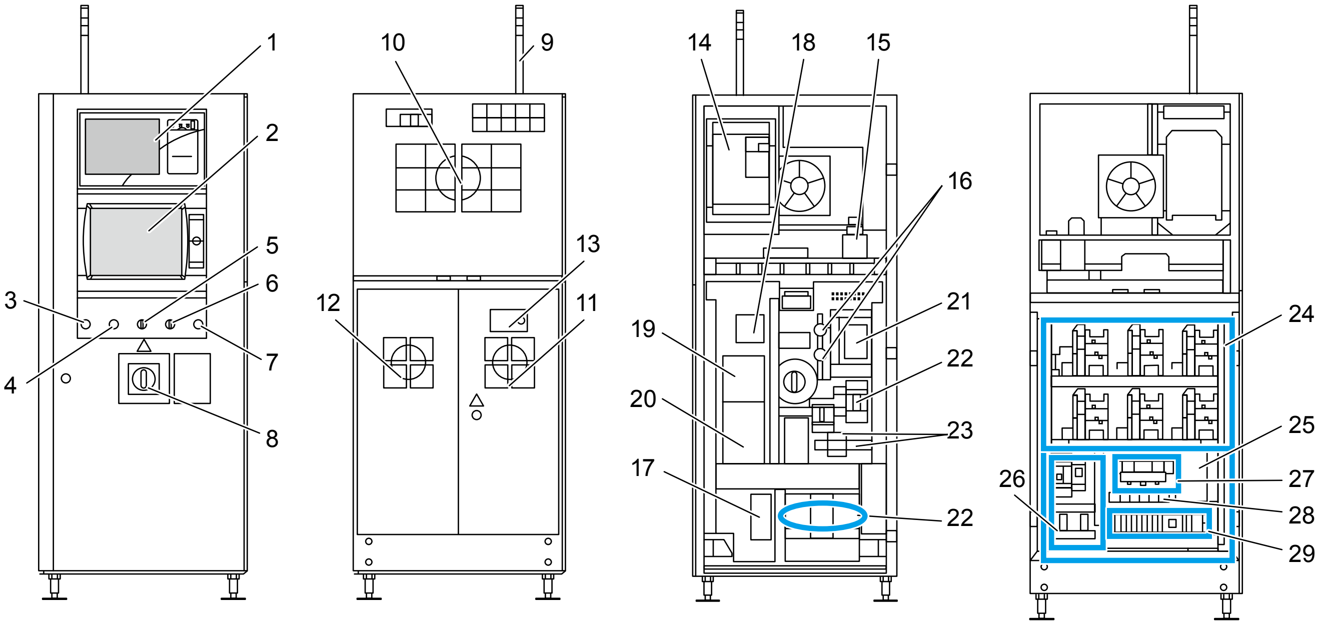
Unit operation switch
(ON during operation)
(OFF during operation stop)


DISPLAY PCB
Unit SPC
Clearer adapter
DRUM BLD
DC/DC converter
SPLICER PCB
MIDDLE PCB
M/G CAN PCB
HOT SPLICER controller
(optional)
BAL-CON PCB

Sec 3 Main Machine

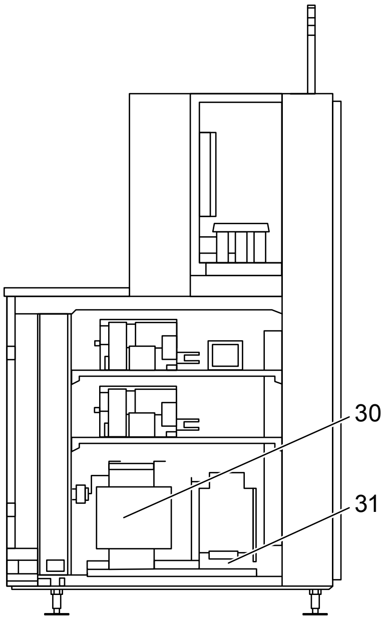
3-1 Layout of Electrical Equipment

Main Control Box

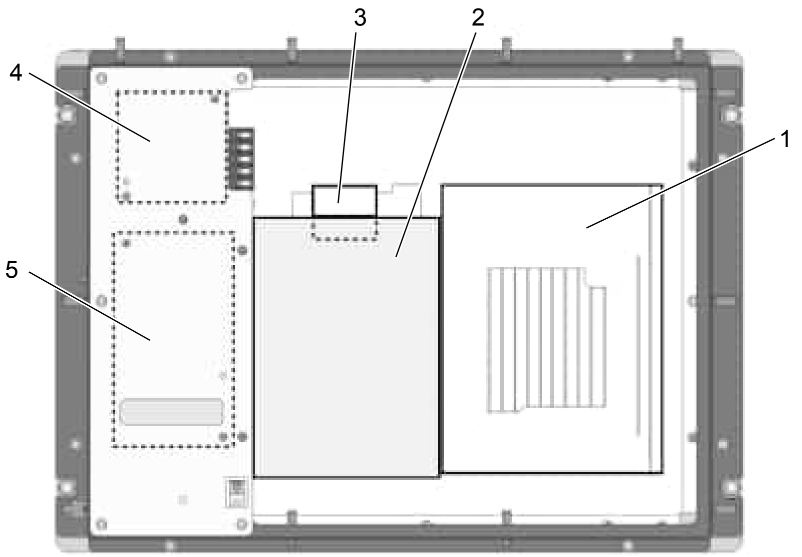


(1) Clearer control box
(2) VOS III
(3) Stop button
(4) Start button
(5) Bobbin/Tray conveyor switch
(6) Blow cleaner switch
(7) Clean mode button
(8) Main switch
(9) Signal tower
(10) Cooling fan (Top)
(11) Cooling fan (Bottom-right)
(12) Cooling fan (Bottom-left)
(13) Package conveyor start button
(14) Blower inverter
(15) AC reactor
(16) Noise filter

(17) DC control power supply
(18) Gateway PCB
(19) PCB for main fiber SPC
(20) Expanded PCB for main fiber SPC
(21) PCB for power distribution
(22) Circuit breaker
(23) Magnet contactor
(24) AC/DC converter
(25) Interface PCB
(26) Circuit breaker
(27) Motor breaker
(28) Magnet contactor
(29) Connectors for machine wiring connections
(30) T1 trance
(31) Noise filter
(Optional [CE specifications])



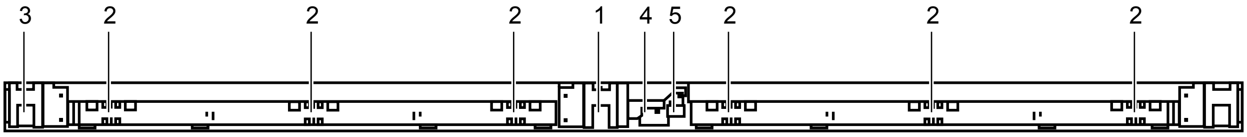
VOS III



[Rear view]

(1) VOS CPU board	(4) DC control power supply (for MCU)
(2) MCU (Machine Control Unit) board	(5) DC control power supply (for VOS)
(3) Compact flash	

Unit Duct



(Length of 1 span)

(1) Span slave print circuit board	(4) Power supply branch connectors (winding unit)
(2) PCB for branching communications	(5) Power supply branch connectors (dust collector [option])
(3) Repeter print circuit board	

3-2 Principal Functions for Main Machine

Machine Operation & Stop Controls

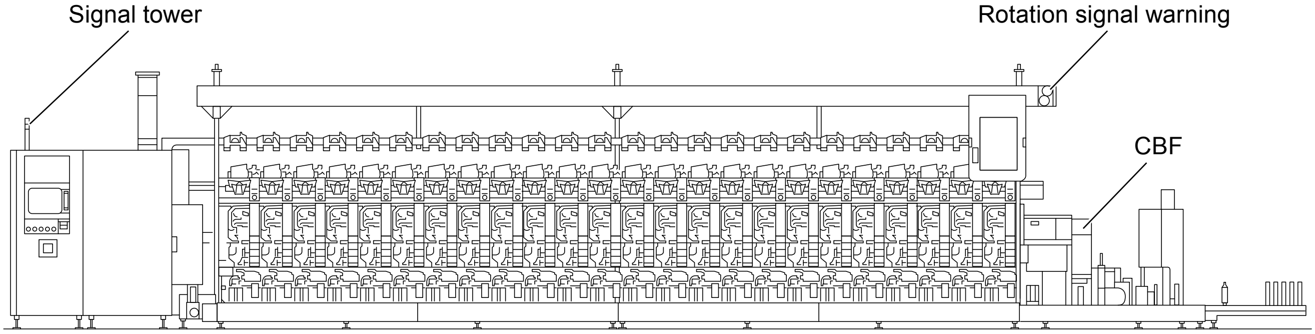
They control the overall start and stop operations for the machine.

Machine Alarm Detection & Support Method Display

The alarm is detected, the machine and devices are stopped, and the alarm location is displayed.
When an alarm occurs, the tower signal and rotation signal warning notify the surrounding personnel, and a picture of the problem location and the support method are displayed.

Machine Operation Status Display

The signal tower on the main control box and the out-end rotation warning signal notify surrounding personnel about the machine operation status.



[Signal Tower on Main Control Box]

This tower notifies the surrounding personnel about the general alarms for the machine.

	Lit	Flashing	
		At 0.2 second intervals	At 2 second intervals
Red	AD error	Communication error	Fixer call*
Yellow	---	Operator call*	---
Green	Operating	---	Stop during operation due to clean mode (Cycle stop)

* Refer to Chapter 6, 1-2.

[Out-end Rotation Warning Signal of the Winding Unit (Link Coner, Bobbin Tray)]

This rotation warning signal notifies the surrounding personnel about the alarms related to the CBF.*

	Lit	Flashing	
		At 1 second intervals	At 2 second intervals
Red	- CBF error - Steam setter problem	- Bypass line full - Bypass line 2 full	- Emergency stop - Spinning frame problem
Yellow	- Bypass line 1 operator call - Bypass line 2 operator call - Bypass line 1 full - Bypass line 2 full - Parts feeder bobbin empty - Parts feeder hoist at upper end	---	---

* Refer to the Chapter 7 (VOS) for further details on the alarms.

Blower Control

The blower control drives the blower motor at the frequency set on the VOS.

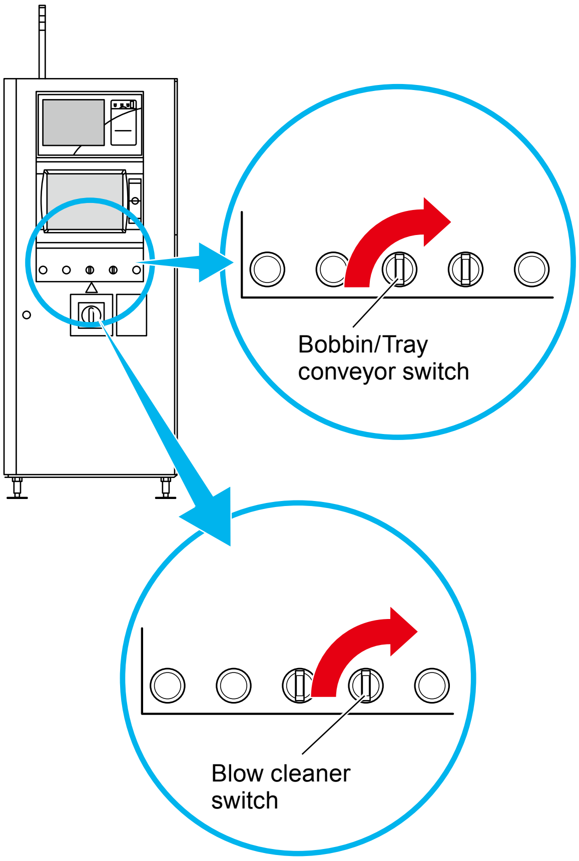
During machine standby	Blower speed during machine standby
During startup sequence	Operates at upper limit setting for blower speed
During machine standby	Operates at lower limit setting for blower speed

Tray Conveyor & Bobbin Conveyor Control

This control drives either the bobbin conveyor (Magazine Type) or the tray conveyor (Bobbin Tray type) using the bobbin / tray conveyor switch on the switch panel located in the main control box.

* There is also a drive switch on the out end side for the bobbin conveyor.

* The tray conveyor controls the motor mounted on the CBF side using the CBF control box.



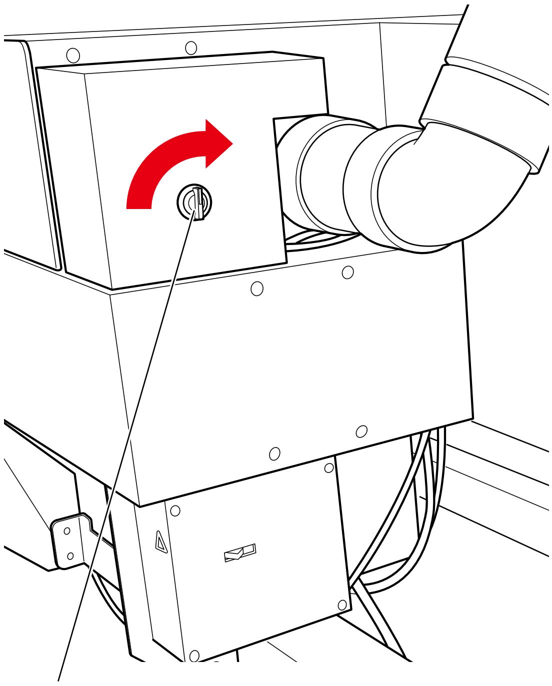
Blow Cleaner Control

The drive for our in-house made blow cleaner is controlled using the blow cleaner switch on the switch panel located in the main control box.
Intermittent operation is also possible.

* Intermittent operation is standard on equipment with 36 winding units or less, and optional on equipment with 38 winding units or more.

Dust Collector Control

There is a dust collector system for each span.
It is controlled using the dust collector operation switch for Span No.1.



Package Shutter Control

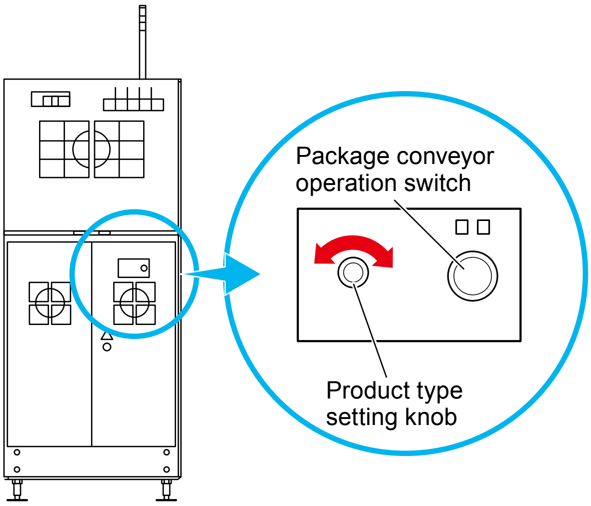
The product type is set using the package conveyor product setting knob. Pressing the start button opens the corresponding shutter for the product type.

* The product type for each span is set on the VOS.

Package Conveyor Control

The package conveyor is controlled using the package conveyor operation switch located on the back side of the main control box. The LED for the switch lights up during drive cycle operation.

* When equipped with a package shutter, the package conveyor is driven after the package shutter operation.



[Manual Stop]
Pressing the switch again during drive cycle operation stops the operation.

[Auto Stop]
Operation automatically stops when the package detection sensor located on the end of the machine does not detect any package for a certain amount of time.

* The auto stop time varies depending on the machine length.

Tray Level Control

This function stops and re-starts operation for the winding unit per span, depending on the supply bobbin status of the winding unit. The tray detection sensor attached to each span detects the bobbin supply status.

* This function comes standard with the Bobbin Tray device and is optional on the link corner device.

* The criteria for the auto stop and restart operation for the winding unit are set on the VOS.

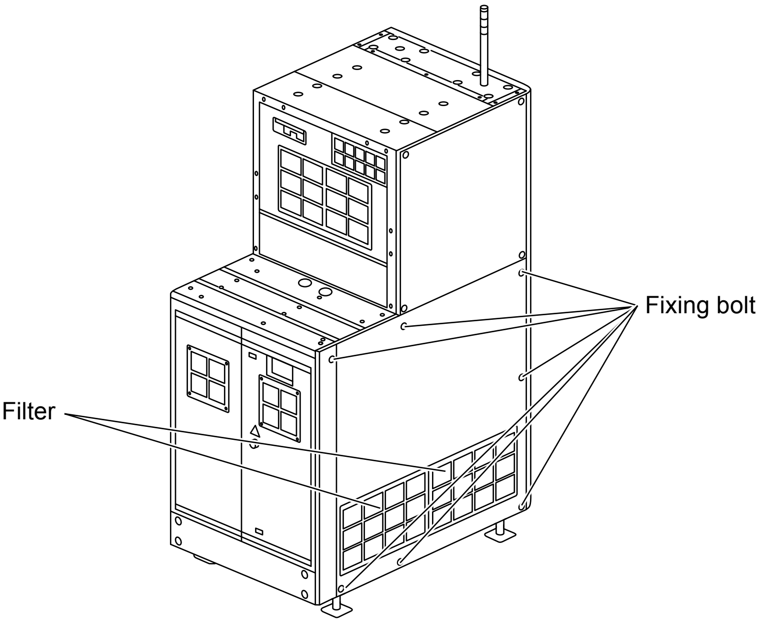
Sec 4 Maintenance

Main Control Box

● Inspection & Cleaning

The temperature inside the main control box will increase if yarn waste, cotton fly or other contaminants have built up on the box's filter. This temperature increase can reduce the life of the electrical components or damage them.
In addition, the VOS panel may rise or pop up if the pressure inside the box increases.

Frequency	Item	Guideline
Monthly	Filter	- Remove the side cover of the main control box and clean from the inside part of the cover using an air gun, etc. * Loosen the seven fixing bolts, and remove the side cover. - Check for clogging



Blower Inverter

Refer to the inverter instruction manual for details.

1. **Remove the detachable terminal with parameter back-up function from the new inverter.**
2. **Turn off the main switch on the main control box.**

   Wait until the inverter CHARGE lamp goes out.
3. **Remove the detachable terminal with parameter back-up function from the damaged inverter.**
   It is not necessary to remove the cable connected to the detachable terminal with parameter back-up function.
4. **Replace the damaged inverter with the new one and attach in original locations.**
5. **Attach the detachable terminal with parameter back-up function.**
6. **Check there are no shorts or earth faults with the circuits connected to the inverter.**
7. **If there are no problems, turn ON the main switch in the machine control box.**
8. **Test run the machine and check there are no problems with functionality.**

Sec 5 Consumables

Main Switch UVT (Undervoltage trip device)

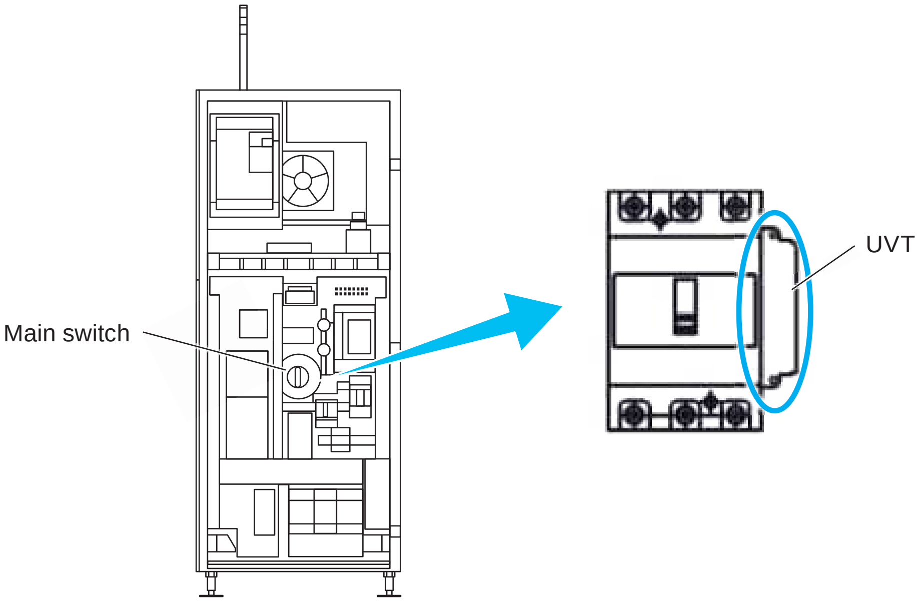
The main switch is equipped with a UVT (Undervoltage trip device) as an accessory device.
This device trips the main switch to prevent a malfunction or machine damage while recovering from the power outage, or when the factory experiences a drop or low electrical power voltage.

The UVT has a product lifespan. If the life of the UVT is exceeded, it will stop tripping even when the trip conditions are met.
(UVT function lifespan: 3500 trips)

* When the operator turns OFF the main switch, this operation does not impact the lifespan.

If the main switch does not trip during a power outage, replace the UVT with a new device.

* For further details on the replacement procedure, refer to the “UVT Device Installation Guide” that is provided with the UVT.



VOS

7
Chapter

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2-5 List of Data Code

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<11210> Package (production) Basic Settings
<11220> Drum Drive
<11240> Tension
<11250> Tension Manager
<11310> Package (quality) Basic Settings
<11360> Clearer
<11370> Splicer
<11410> Unit Alarm Basic Settings
<11420> Unit Alarm Forced Ejection Settings
<11430> Unit Alarm Details Settings
<11440> Vibration Alarm Settings (Visual Display)
<11450> Vibration Alalrm Settings
<11500> Winding Unit Operation Adjustment
<11520> Suction Mouth Operation Adjustment
<12100> Main Machine Basic Settings
<12200> Static Pressure
<12300> Package Conveyor
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<13200> AD Operation Adjustment
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<41320> AD SPC Replacement
<41420> CBF SPC Replacement
<41520> Inspector SPC Replacement
<41620> MCU Replacement
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<42100> Update > VOS/MCU
<42300> Update > Units
<42700> Update > Driver
<42200> Update > Main Machine
<42400> Update > AD
<42510> Update > CBF
<42520> Update > Supply Units
<42530> Update > Spin Inspector
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<45300> Unit Alarm Logs
<45200> Main Machine Alarm Logs
<45400> AD Alarm Logs
<45500> CBF Alarm Logs
<45600> Spin Inspector Alarm Logs
<48000> Data Clear

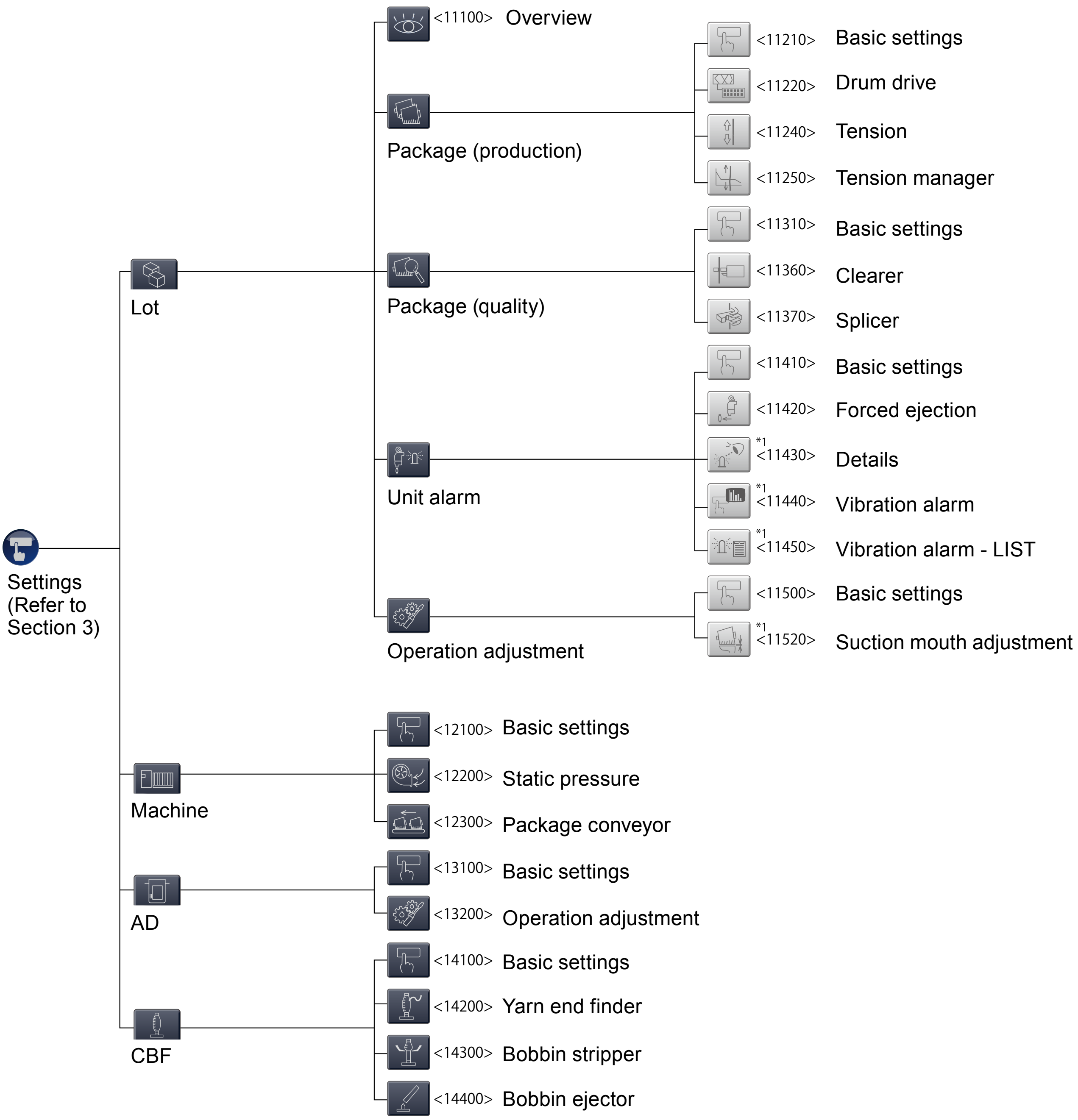
7 Lot Management 51
<51100> Lot Allocation
<51200> Lot Deletion
<51300> Lot Interruption
<51400> Lot Copy

8 Administrator Screens 55
<61100> Change Password of Access Level
<61210 - 61240>..
Access Property (Settings)
<61310> Access Property (Maintenance)
<61410 - 61420>..
Access Property (Manager)
<62100> Initial Settings
<62200> Display Settings
<62300> Viewer
<63300> Machine Specification Settings
<64100> Report Format Settings
<65100> Shift Schedule
<65200> Cleaning
<65300> Test Shift
<66110~66150> ....
Lot Batch Settings - Package (production)
<66210~66270>..
Lot Batch Settings - Package (quality)
<66310 - 66340>...
Lot Batch Settings - Unit Alarm
<66400 - 66420> ....
Lot Batch Settings - Operation Adjustment
<66510> Lot Batch Settings - Maintenance

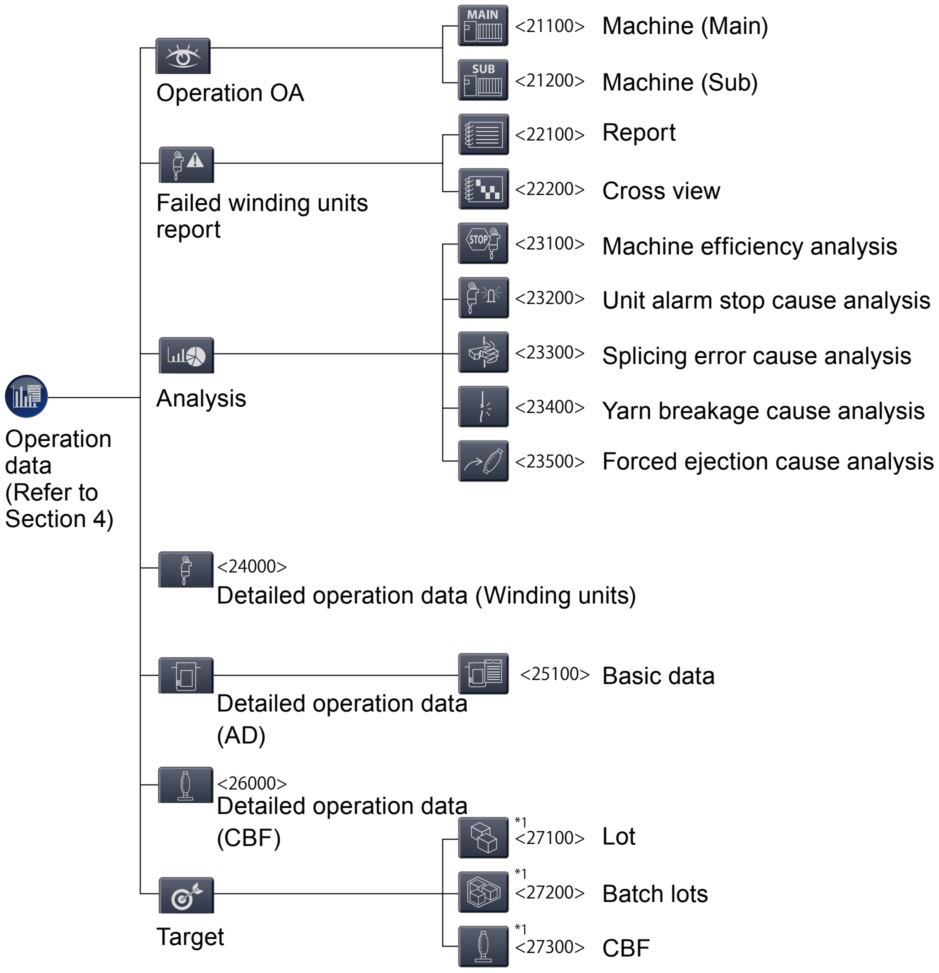
9 Alarm Screens... 63

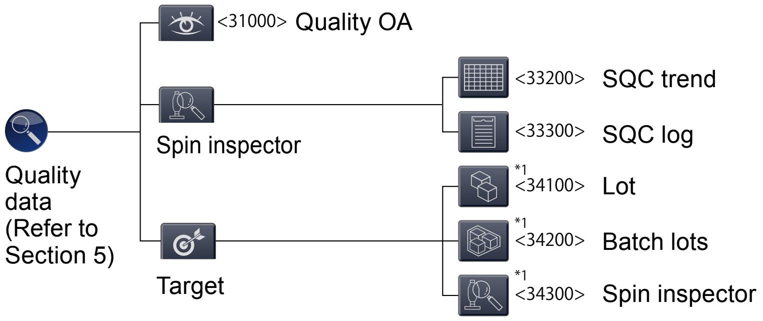
10 Data Output 64

Screen ID & Access Level


Settings (Refer to Section 3)
Lot
<11100> Overview
Package (production)
<11210> Basic settings
<11220> Drum drive
<11240> Tension
<11250> Tension manager
Package (quality)
<11310> Basic settings
<11360> Clearer
<11370> Splicer
Unit alarm
<11410> Basic settings
<11420> Forced ejection
*1 <11430> Details
*1 <11440> Vibration alarm
*1 <11450> Vibration alarm - LIST
Operation adjustment
<11500> Basic settings
*1 <11520> Suction mouth adjustment
Machine
<12100> Basic settings
<12200> Static pressure
<12300> Package conveyor
AD
<13100> Basic settings
<13200> Operation adjustment
CBF
<14100> Basic settings
<14200> Yarn end finder
<14300> Bobbin stripper
<14400> Bobbin ejector

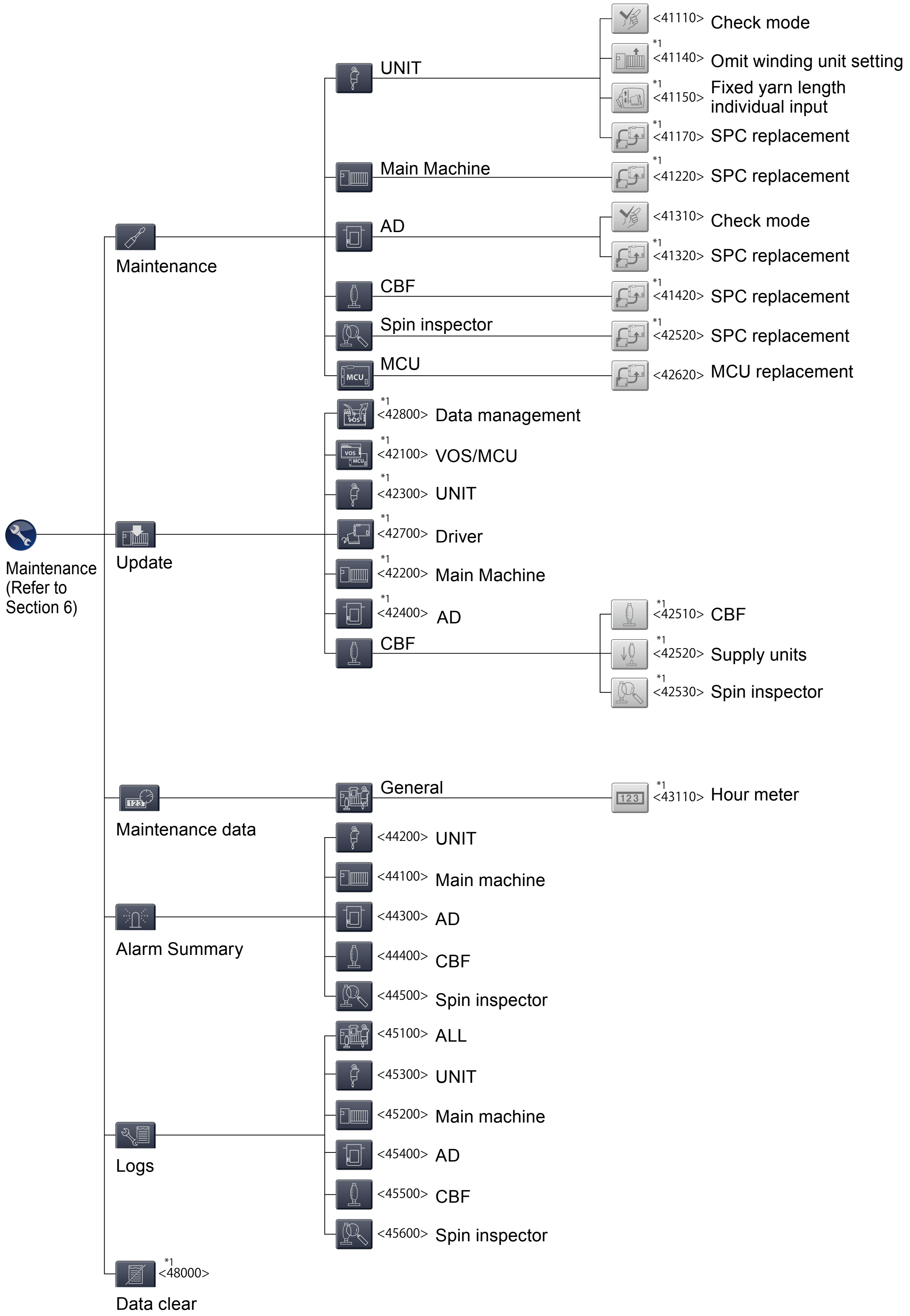
[*1] You must get MAINTENANCE or ADMINISTRATOR authorization.


Operation data
(Refer to Section 4)
Operation OA
<21100> Machine (Main)
MAIN
<21200> Machine (Sub)
SUB
Failed winding units report
<22100> Report
<22200> Cross view
Analysis
<23100> Machine efficiency analysis
STOP
<23200> Unit alarm stop cause analysis
<23300> Splicing error cause analysis
<23400> Yarn breakage cause analysis
<23500> Forced ejection cause analysis
<24000>
Detailed operation data (Winding units)
Detailed operation data
(AD)
<25100> Basic data
<26000>
Detailed operation data
(CBF)
Target
*1 <27100> Lot
*1 <27200> Batch lots
*1 <27300> CBF

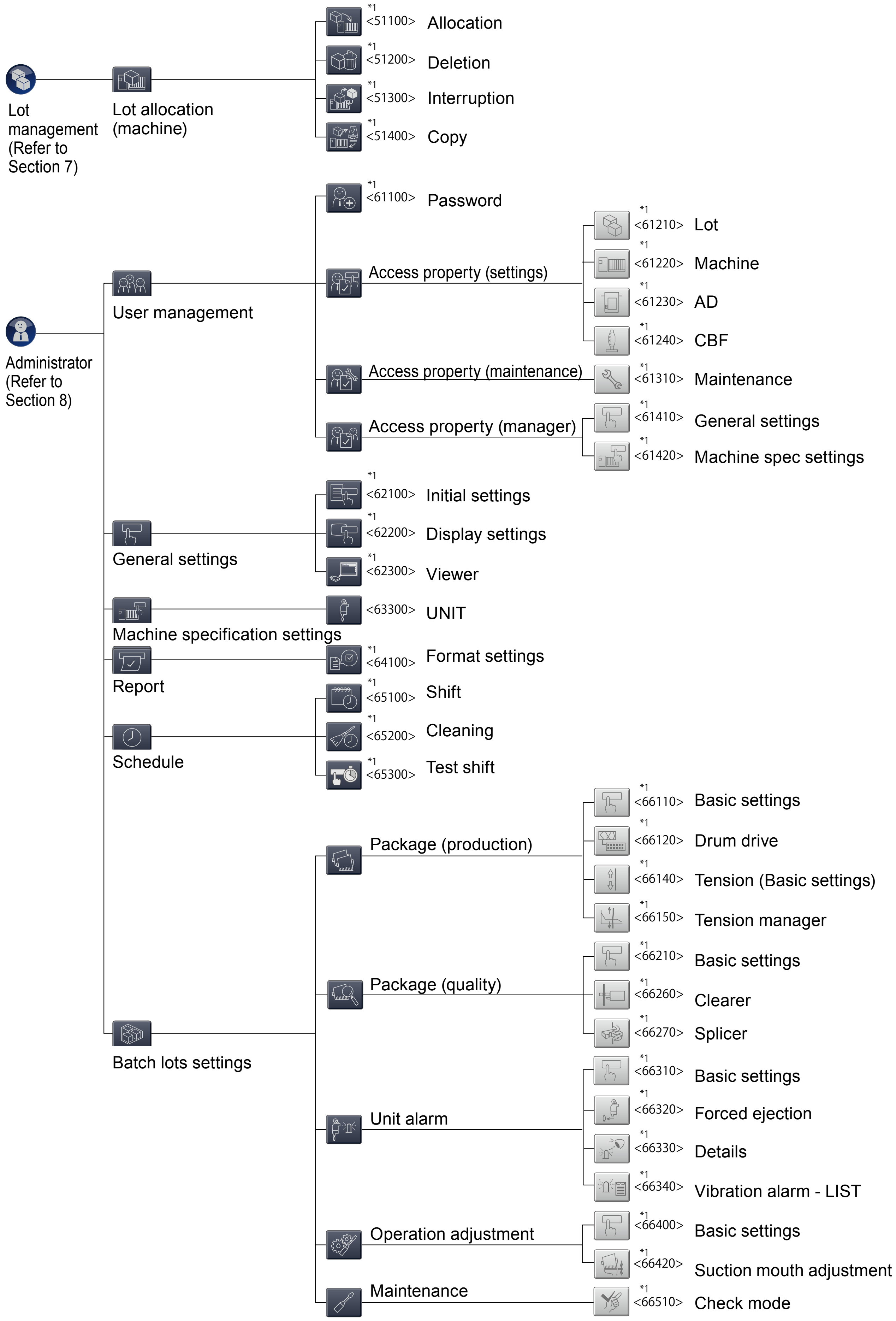

Quality data
(Refer to Section 5)
<31000> Quality OA
Spin inspector
<33200> SQC trend
<33300> SQC log
Target
*1 <34100> Lot
*1 <34200> Batch lots
*1 <34300> Spin inspector

---

[1] You must get MAINTENANCE or ADMINISTRATOR authorization.


Maintenance (Refer to Section 6)
Maintenance
UNIT
<41110> Check mode
*1 <41140> Omit winding unit setting
*1 <41150> Fixed yarn length individual input
*1 <41170> SPC replacement
Main Machine
*1 <41220> SPC replacement
AD
<41310> Check mode
*1 <41320> SPC replacement
CBF
*1 <41420> SPC replacement
Spin inspector
*1 <42520> SPC replacement
MCU
<42620> MCU replacement
Update
*1 <42800> Data management
*1 <42100> VOS/MCU
*1 <42300> UNIT
*1 <42700> Driver
*1 <42200> Main Machine
*1 <42400> AD
CBF
*1 <42510> CBF
*1 <42520> Supply units
*1 <42530> Spin inspector
Maintenance data
General
*1 <43110> Hour meter
Alarm Summary
<44200> UNIT
<44100> Main machine
<44300> AD
<44400> CBF
<44500> Spin inspector
Logs
<45100> ALL
<45300> UNIT
<45200> Main machine
<45400> AD
<45500> CBF
<45600> Spin inspector
*1 <48000>
Data clear

[1] You must get MAINTENANCE or ADMINISTRATOR authorization.


Lot management (Refer to Section 7)
Lot allocation (machine)
*1 <51100> Allocation
*1 <51200> Deletion
*1 <51300> Interruption
*1 <51400> Copy
Administrator (Refer to Section 8)
User management
*1 <61100> Password
Access property (settings)
*1 <61210> Lot
*1 <61220> Machine
*1 <61230> AD
*1 <61240> CBF
Access property (maintenance)
*1 <61310> Maintenance
Access property (manager)
*1 <61410> General settings
*1 <61420> Machine spec settings
General settings
*1 <62100> Initial settings
*1 <62200> Display settings
*1 <62300> Viewer
Machine specification settings
<63300> UNIT
Report
*1 <64100> Format settings
Schedule
*1 <65100> Shift
*1 <65200> Cleaning
*1 <65300> Test shift
Batch lots settings
Package (production)
*1 <66110> Basic settings
*1 <66120> Drum drive
*1 <66140> Tension (Basic settings)
*1 <66150> Tension manager
Package (quality)
*1 <66210> Basic settings
*1 <66260> Clearer
*1 <66270> Splicer
Unit alarm
*1 <66310> Basic settings
*1 <66320> Forced ejection
*1 <66330> Details
*1 <66340> Vibration alarm - LIST
Operation adjustment
*1 <66400> Basic settings
*1 <66420> Suction mouth adjustment
Maintenance
*1 <66510> Check mode

[1] You must get MAINTENANCE or ADMINISTRATOR authorization.

Pre I Introduction

This instruction manual describes the function and operating method of the VOS software package.
Be certain to read this manual thoroughly before using the VOS software package.

Pre II Copyright Notice

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- The contents of this instruction manual and software package are subject to change without prior notice.
- There may be slight differences in specifications between the delivered machine and the manual dependent upon design and model type.

This instruction manual must be made available to operators and maintenance personnel at all times.

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Edited by: Documentation Team

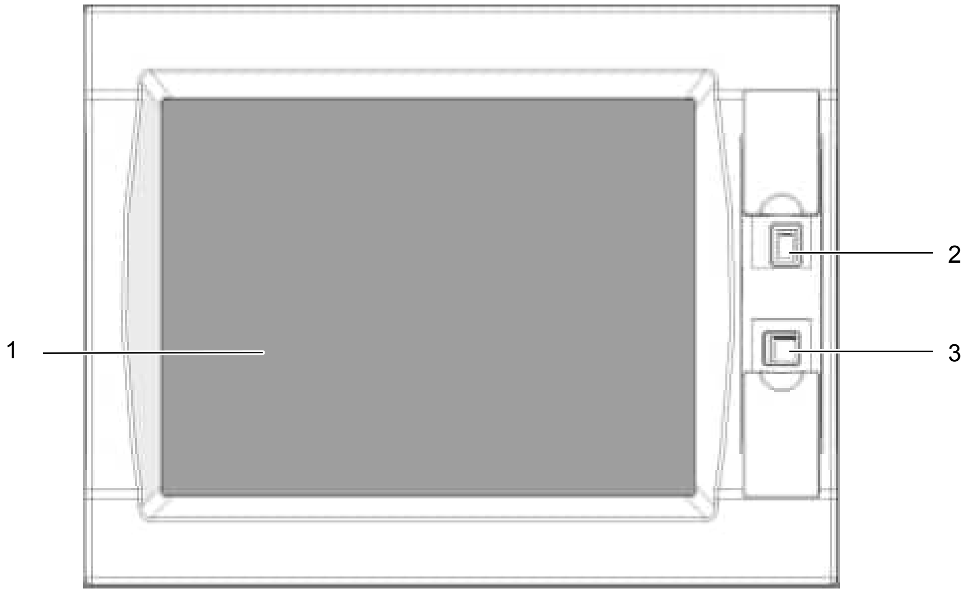
Sec 1 General Description

1-1 Visual On-demand System (VOS)

This system enables the user to conduct a wide variety of tasks, from machine operation condition settings and input to production status monitoring operations, such as machine efficiency and yarn quality management.

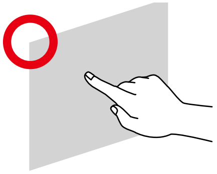
The following operations and monitoring can be conducted on the VOS.
- Inputting settings for all types of operation condition
- Saving, allocating and deleting lot settings
- Displaying data on machine operation status and data analysis results
- Setting all maintenance modes
- Displaying machine alarm status and log
- Obtaining machine operation data using a USB memory

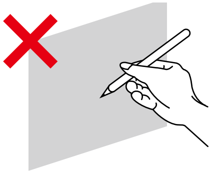
1-2 Hardware Configurations



CAUTION

Be sure to always use your finger to operate the touch panel.
Do not use hard, sharp objects, like the tip of a pen, to operate the touch panel. Using such objects will damage the touch panel.





1) LCD color touch panel
This touch panel is a 15 inch color LCD. Touch the screen directly to operate.

2) USB connector
If you insert a USB memory, you can obtain a machine setting report, an operation report or copy data from a screenshot.

3) LAN connector
This connector is for use by Murata service technicians.

1-3 Access Level Management

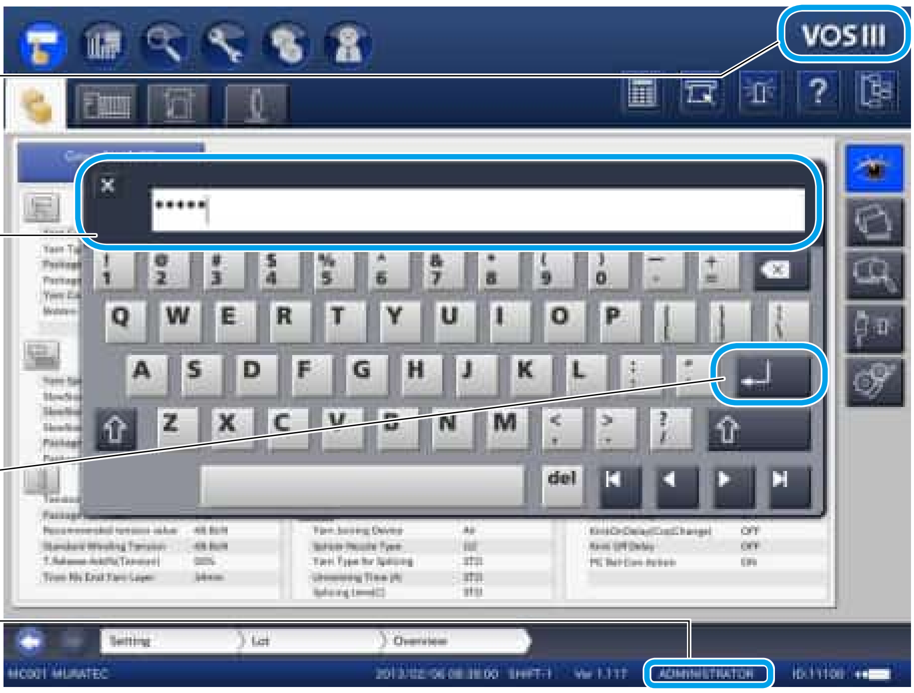
The VOS is equipped with access levels that support each user. The content and operations available to the user vary depending on each level.

[Overview of Access Levels]

Access level Available operations	OPERATOR	MAINTENANCE	ADMINISTRATOR
Browse setting and monitoring items	○	○	○
General operation and maintenance setting changes	---	○	○
Management setting changes such as machine specifications, display settings and passwords	---	---	○

* The screen displayed will differ depending on access level. Refer to Chapter 7 Contents, “***Screen ID & Access Level***” for access levels.

1-4 Switching Access Levels



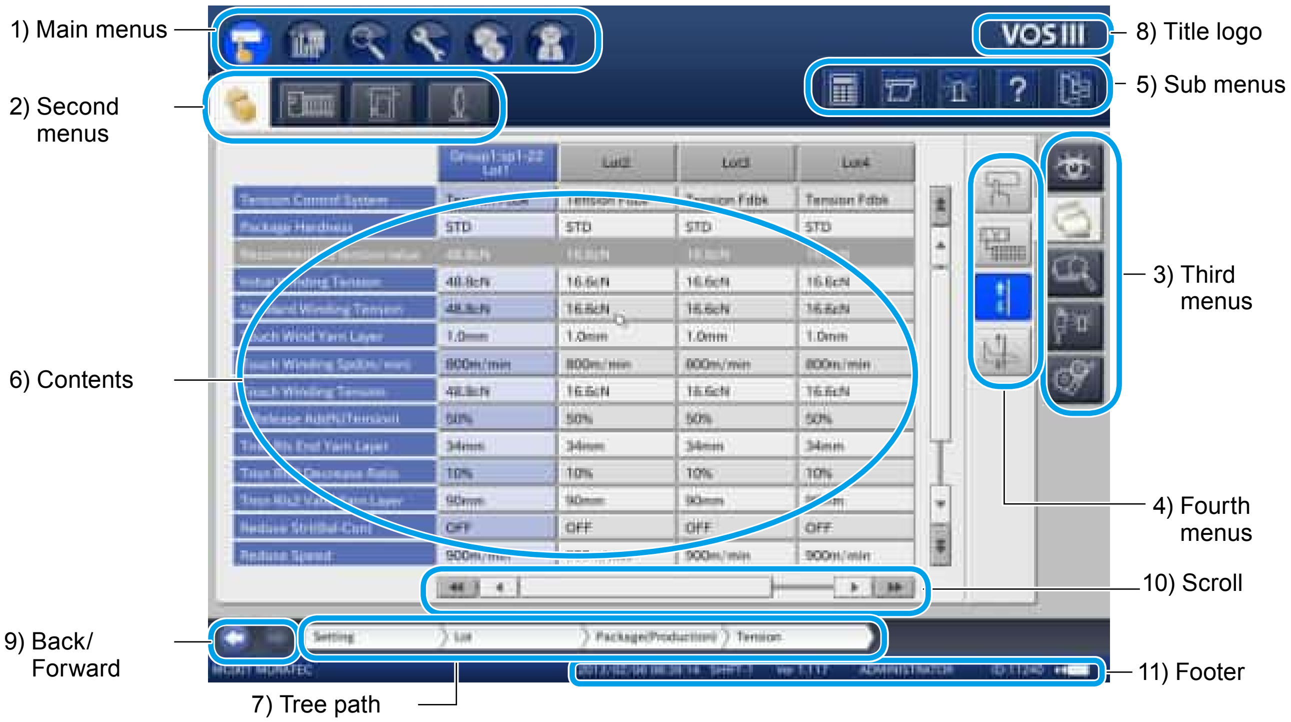
1. **Touch the title logo to display the keyboard.**
2. **Input the password for each access level.**
   * Murata service technicians will specify the password default settings during installation.
3. **Touch the Enter key.**

Access level display

* If no VOS operation has been performed within a set time, the system automatically returns to the OPERATOR Level.

Sec 2 Setting

2-1 Screen Features


1) Main menus
2) Second menus
6) Contents
9) Back/ Forward
7) Tree path
8) Title logo
5) Sub menus
3) Third menus
4) Fourth menus
10) Scroll
11) Footer
VOS III

1) Main Menus

The categories: [Settings], [Operation Monitoring], [Quality], [Maintenance], [Lot Management] and [Administrator] are divided and displayed with icons.

[Settings]
This screen is for creating new lots and making setting changes.

[Operation Monitoring]
This screen displays data on machine operation status and data analysis results.

[Quality]
This screen displays the bobbin and package quality related data. The spin inspector (Link Coner) also shows data on defective or faulty bobbins.

[Maintenance]
This screen performs maintenance operations, such as all maintenance mode settings, alarm history and program downloading.

[Lot Management]
This screen performs operations such as allocating and deleting lots.

[Administrator]
This screen performs all the basic settings, such as time, unit, switching the language, shift time and machine specification settings.

2) Second Menus
3) Third Menus
4) Fourth Menus

The content for the main menu is divided further into different types of menus: 2) to 4). The menu system displays up to 4 levels. If you select the icon you want, the corresponding screen will be displayed.

5) Submenus
Apart from the main menu, these submenus display frequently used screens and functions.

	[Calculator] This calculator can be used on the VOS screen.
	[Data Output] This displays the menu for obtaining settings and shift reports, or a hardcopy of the screen.
	[Alarm] This screen displays each type of alarm that occurs on the machine. It turns red and flashes only when an alarm occurs.
?	[Help] This key displays help available for setting items and data. After touching this key, select the appropriate item.
	[Menu Map] This key displays a ten-key input screen. Use this key as a shortcut.

6) Contents
The content selected from menus 1) to 5) is displayed.

7) Tree Path
The path selected from menus 1) to 5) is displayed using a written description. By checking this path, you can confirm the location of the screen currently displayed.

8) Title Logo
Touching the title logo will display the access level login screen.

9) Back/Forward
You can return or advance to screens previously visited.

10) Scroll
If the entire description cannot be displayed on one screen, a scroll bar is displayed.
You can scroll down one line at a time, or advance to the next page.

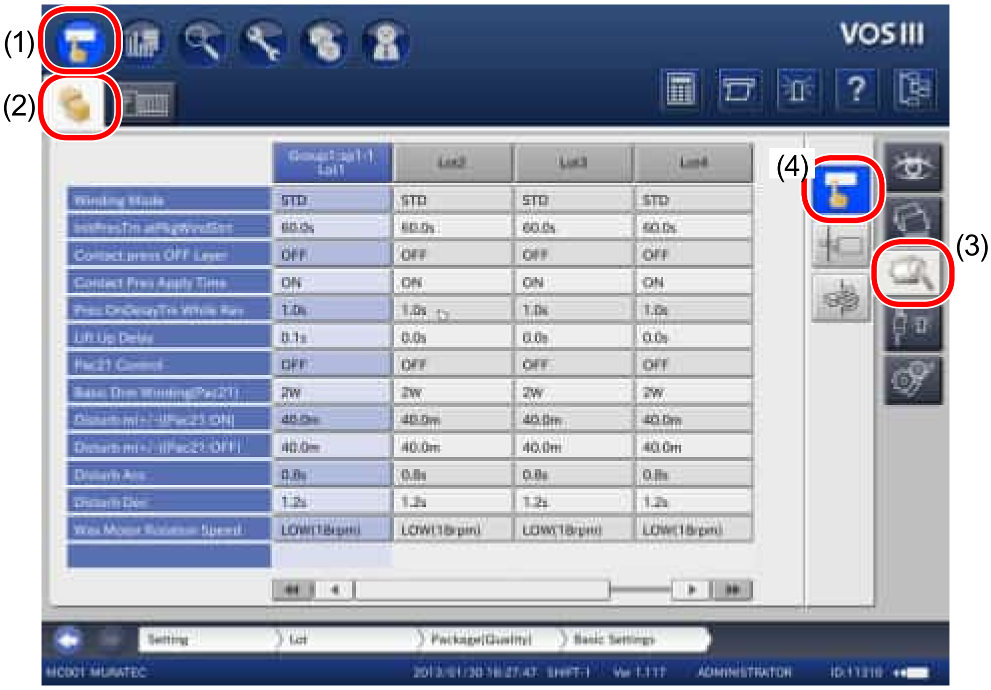
11) Footer
This displays the date, time, current shift, VOS software version, access level and display screen ID.

2-2 Screen Transition

Touching Icons for Screen Transition

By touching the icons in order: (1) main menu, (2) second menu, (3) third menu, (4) fourth menu, the display will transition to the corresponding screen.

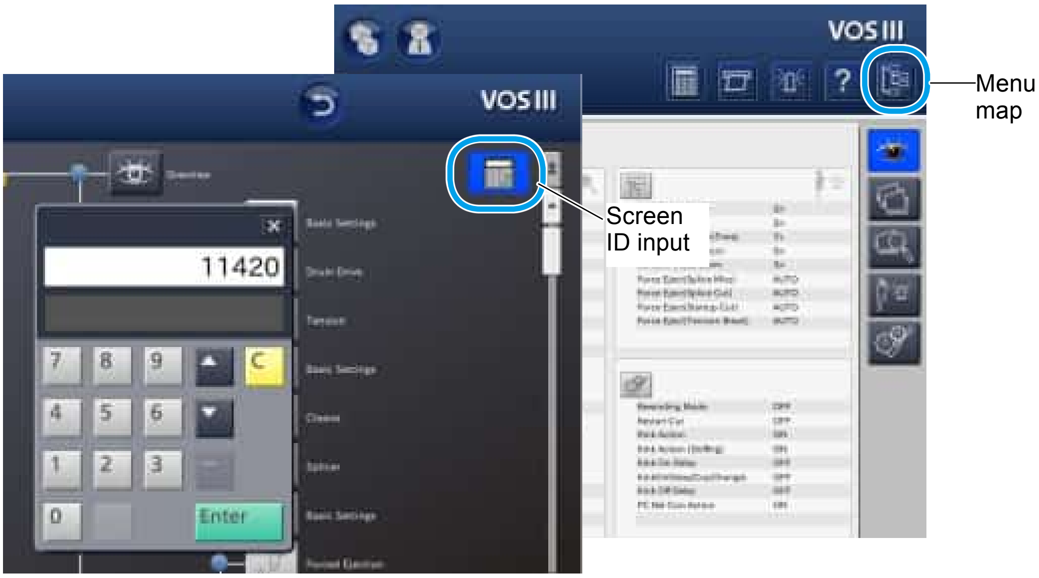
* This instruction manual has procedures for each menu screen: (1) through (4). Depending on the screen, there is sometimes no icon display for (3) and (4).



Inputting Screen ID for Screen Transition

Input the number for the screen ID to transition to the corresponding screen. Refer to Chapter 7, Contents, "***Screen ID & Access Level***" for the corresponding screen ID.

1. **Login to the access level that displays the screen you want. (Refer to Chapter 7, 1-3)**
2. **First touch the menu map and then the screen ID icon.**
3. **Input the number for the screen ID, and then touch "Enter."**



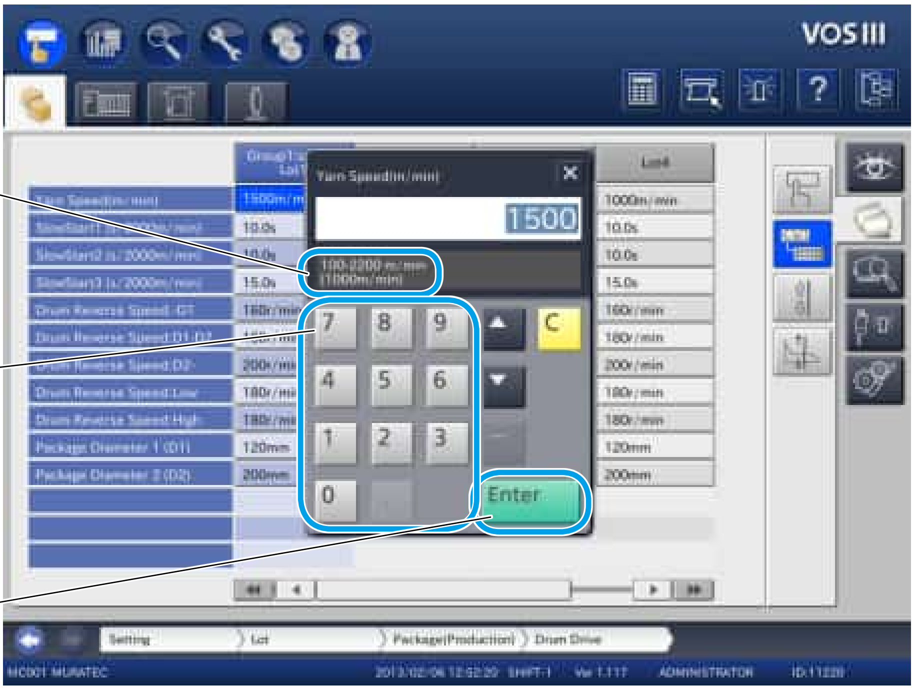
2-3 Setting Input

There are 3 methods for inputting the setting value. Depending on the input item, one of the input screens will display.

* The setting value can be changed by logging in through the prescribed access level. Refer to Chapter 7, 1-4 for access level changes.

Entering Numerical Values

The number ten-key will be displayed for items that require number input.


VOS III
Yarn Speed(m/min)
1500
100-2200 m/min
(1000m/min)
7
8
9
4
5
6
1
2
3
0
C
Enter
Setting
Lot
Package(Production)
Drum Drive
MC001 MURATEC
ADMINISTRATOR

Setting input range
* The value inside the parenthesis is the default setting.

1. **Input the value for the setting using the number ten-key.**

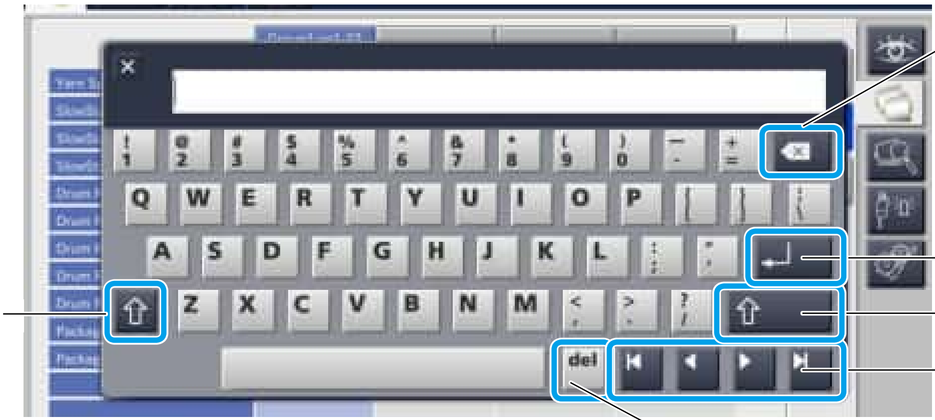
   * Touching either ▲ or ▼, enables smaller value adjustments to be made.

   * If you make an input mistake, touch C.

2. **Touch “Enter.”**

Entering Characters

The keyboard will be displayed for items that require letter input.


×
! 1
@ 2
# 3
$ 4
% 5
^ 6
& 7
* 8
(9
) 0
_ -
+ =
Q
W
E
R
T
Y
U
I
O
P
A
S
D
F
G
H
J
K
L
Z
X
C
V
B
N
M
del

Back space key

Enter key

Shift key

Shift key

Move cursor

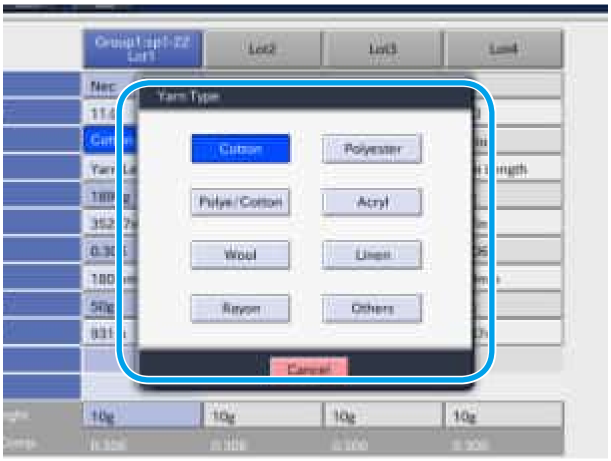
Delete key

⌫	Deletes the letter in front of the cursor.
↵	Enters or confirms letter input.
⇧	Touching the shift key switches the letters to lowercase or uppercase and switches the number keys to symbols.
⏮ ◀ ▶ ⏭	Touching these arrow keys moves the position of the cursor. You can move the cursor position by one letter, or to the start and end of the line.
del	Deletes the letter behind the cursor.

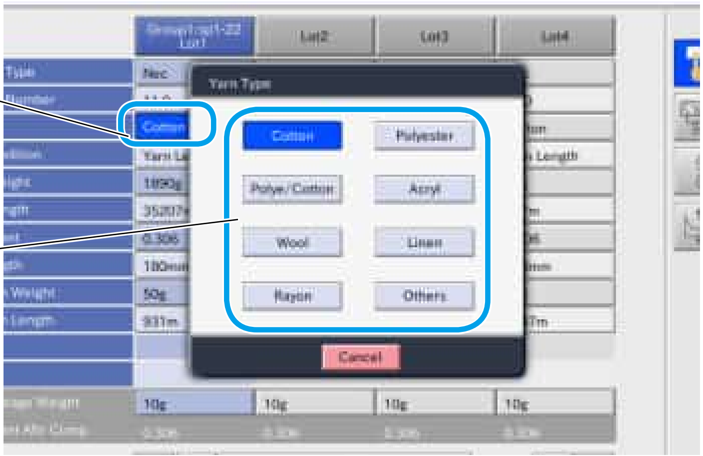
Item Selection Input

A pop-up window is displayed when only one item selection is required from multiple choices. Select the applicable setting from the choices available.

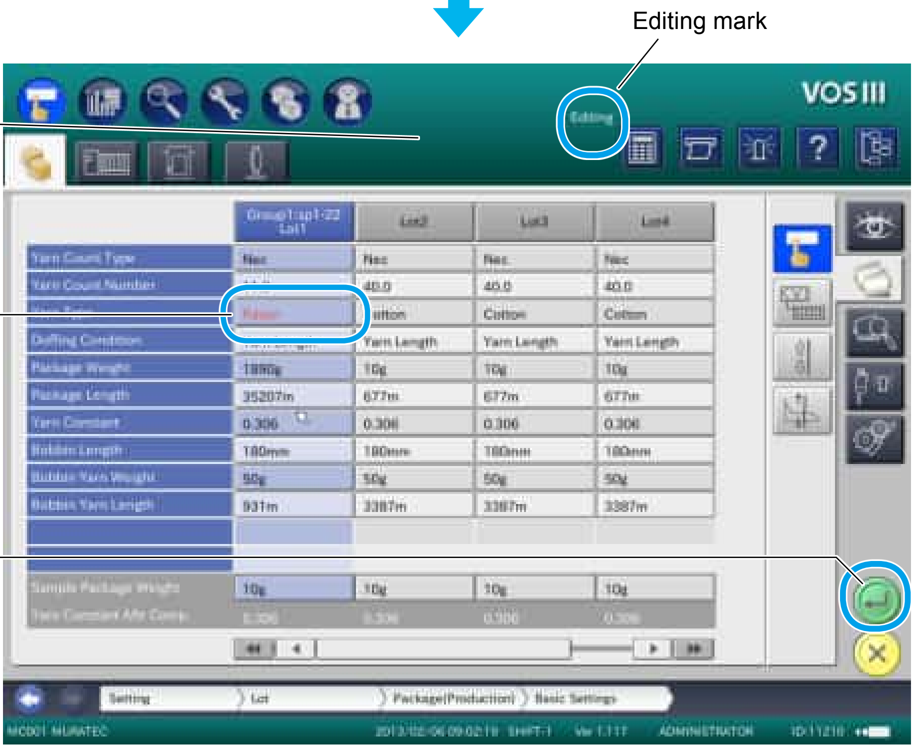
* To close the pop-up window, touch “Cancel.”


Group1:sp1-22 Lot1
Lot2
Lot3
Lot4
Yarn Type
Cotton
Polyester
Polye/Cotton
Acryl
Wool
Linen
Rayon
Others
Cancel

2-4 Editing & Confirming the Setting


Group1:sp1-22 Lot1
Lot2
Lot3
Lot4
Yarn Type
Cotton
Polyester
Polye/Cotton
Acryl
Wool
Linen
Rayon
Others
Cancel

1. **Touch the setting you want to change.**
2. **Select an item, or input a value, and confirm the setting.**


Editing mark
VOS III
Editing
Group1:sp1-22 Lot1
Lot2
Lot3
Lot4
Yarn Count Type
Yarn Count Number
Yarn Type
Doffing Condition
Package Weight
Package Length
Yarn Constant
Bobbin Length
Bobbin Yarn Weight
Bobbin Yarn Length
Sample Package Weight
Yarn Constant Afr Comp
Setting
Lot
Package(Production)
Basic Settings
MC001 MURATEC

The background turns green during the editing operation, and it turns dark blue after the setting is completed.

The changed setting display turns red.

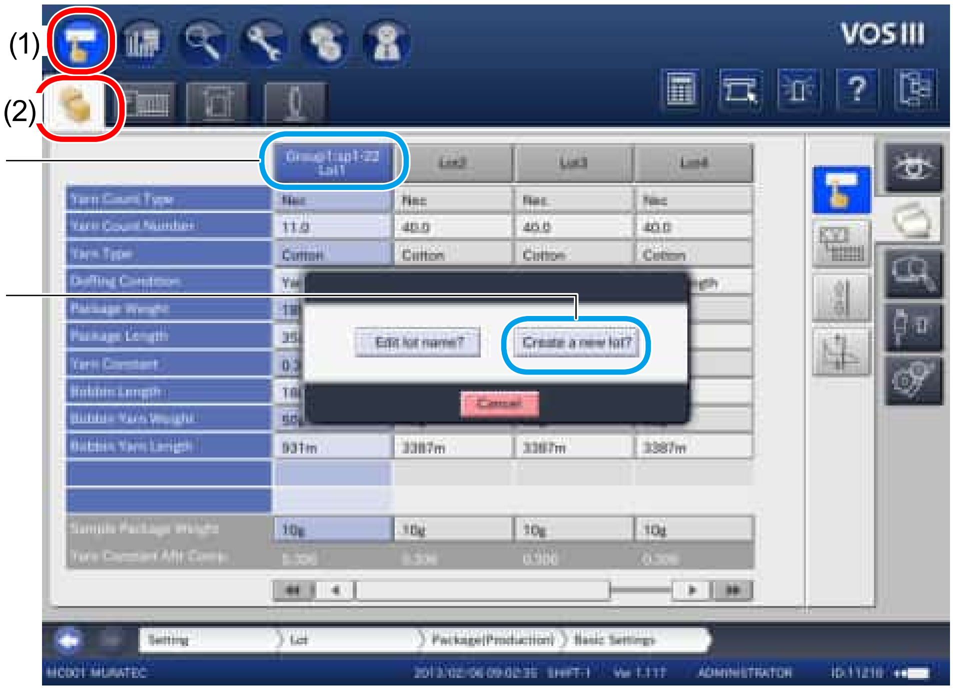
3. **Touch “Confirm.”**
   The setting is sent to the system.

   * If the send operation fails, the system name for the send error location will be displayed.

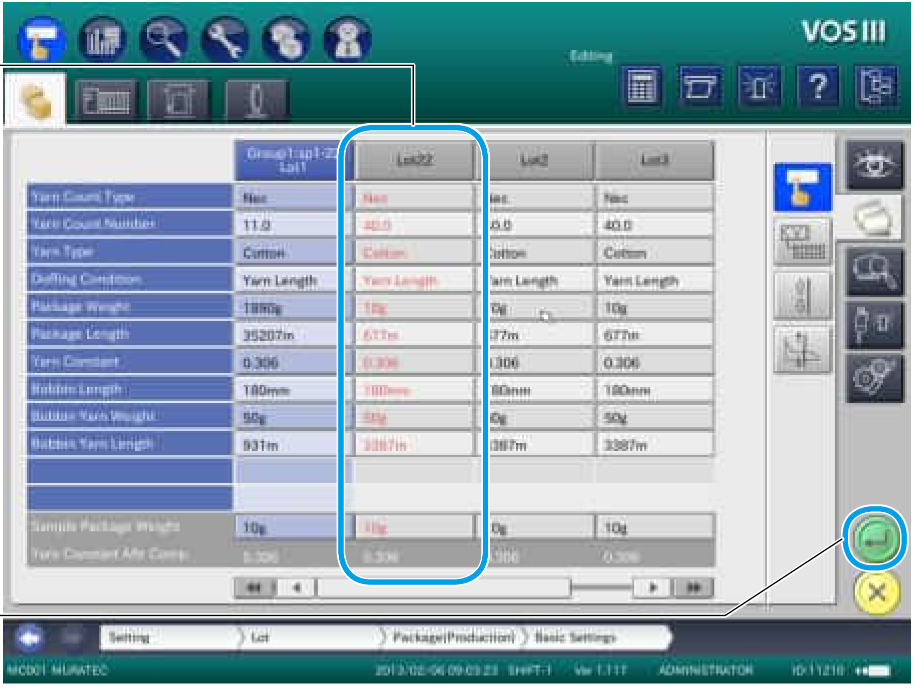
Create New Lot

You can create a new lot from any screen related to the lot settings.

1. **Touch (1) and then (2) in order.**
   The lot creation screen will be displayed.

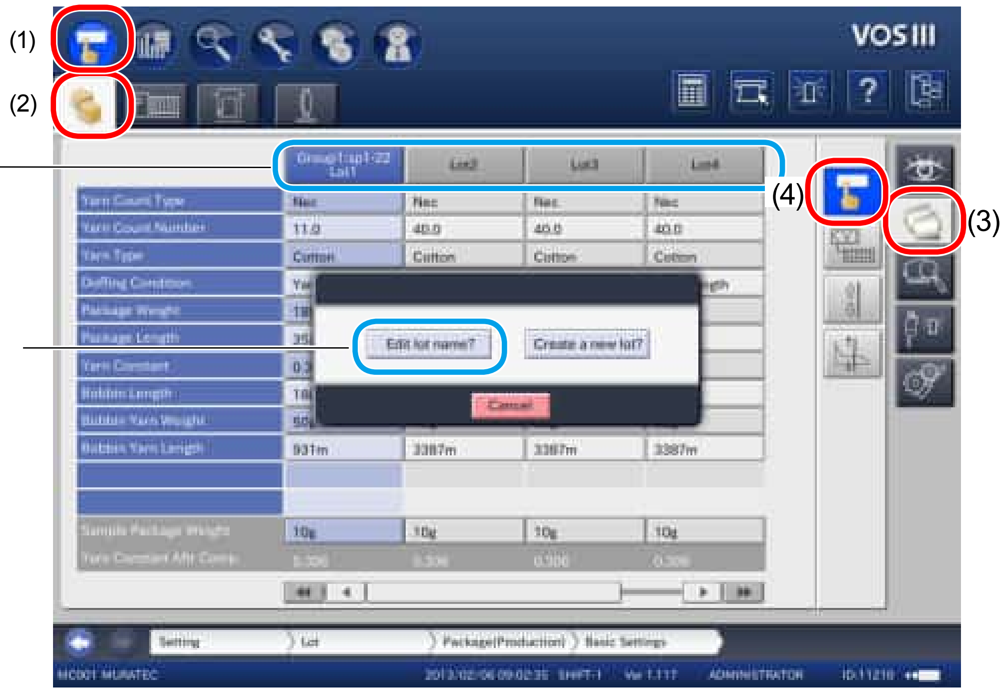

(1)
(2)
VOS III
Group1:sp1-22 Lot1
Lot2
Lot3
Lot4
Edit lot name?
Create a new lot?
Cancel
Setting
Lot
Package(Production)
Basic Settings

2. **Touch the lot you want to copy.**
3. **Touch “Create a new lot.”**


VOS III
Editing
Group1:sp1-22 Lot1
Lot22
Lot2
Lot3
Setting
Lot
Package(Production)
Basic Settings

4. **The selected lot will be copied, so input the new lot name and settings.**
5. **Touch “Enter.”**

Change Lot Name


(1)
(2)
(3)
(4)
VOS III
Group1:sp1-22 Lot1
Lot2
Lot3
Lot4
Yarn Count Type
Yarn Count Number
Yarn Type
Doffing Condition
Package Weight
Package Length
Yarn Constant
Bobbin Length
Bobbin Yarn Weight
Bobbin Yarn Length
Sample Package Weight
Yarn Constant Aftr Comp.
Nec
11.0
40.0
Cotton
931m
3387m
10g
Edit lot name?
Create a new lot?
Cancel
Setting
Lot
Package(Production)
Basic Settings
MC001 MURATEC
2013/02/06 09:02:35
SHIFT-1
Ver 1.117
ADMINISTRATOR

1. **Touch “Lot.”**

2. **Touch “Edit lot name.”**

3. **Input the lot name, and touch “Confirm.”**
   The lot name will change.

2-5 List of Data Code

AAT%	AD Alarm Down Time Ratio [%]
ADS%	AD Down Time Ratio [%]
ADTR	No. of AD Troubles
AEF%	Actual Production Efficiency [%]
ALLY	Total Wind Length [m]
ART%	AD Run Time Ratio [%]
ASTM	Unit Alarm Down Time
AWT%	AD Wait Time Ratio [%]
CC/Y	Ave No. of Count Fault Cuts Per 100 km Yarn
CDTM	CBF Down Time [min]
CRTM	CBF Running Time [min]
CWTM	CBF Waiting Time [min]
DAS%	Unit Alarm Down Time Ratio [%]
DFP%	Full Package Down Time Ratio [%]
DOF%	AD Successful Doffing Ratio [%]
DOS%	Other Down Time Ratio [%]
DSC%	Splicing Cycle Time Ratio [%]
DSW%	Splicing Wait Down Time Ratio [%]
DUO%	Unit Down Time Ratio [%]
FBE%	Full Bobbin Eject Ratio [%]
FC/Y	Ave No. of Foreign Matter Cuts Per 100 km Yarn
FPTM	Full Package Down Time [min]
JO/Y	Ave No. of Splicing Per 100 km Yarn
JOIP	Ave No. of Splicing Per Package
JOIY	Ave No. of Splicing Per 10 km Yarn
LC/Y	Ave No. of Long Thick Place Cut Per 100 km Yarn
MCM%	Clearer Zero-adjust Error Ratio [%]
MIS%	Splicing Error Ratio [%]
MLB%	Bobbin Supply Error Ratio [%]
MLC%	Ratio of Lay-in Cut [%]
MLW%	Ratio of Splicing Error By No Lower Yarn [%]
MSL%	Ratio of Splicer Error [%]
MSM%	Ratio of Splice cuts Error[%]
MSY%	System Error Ratio [%]
MUP%	Ratio of Splicing Error By No Upper Yarn [%]
NACT	No. of CBF Actions
NADA	No. of AD Actions
NADM	No. of Auto Doffing Error
NATM	No. of Attempts Per Spindle

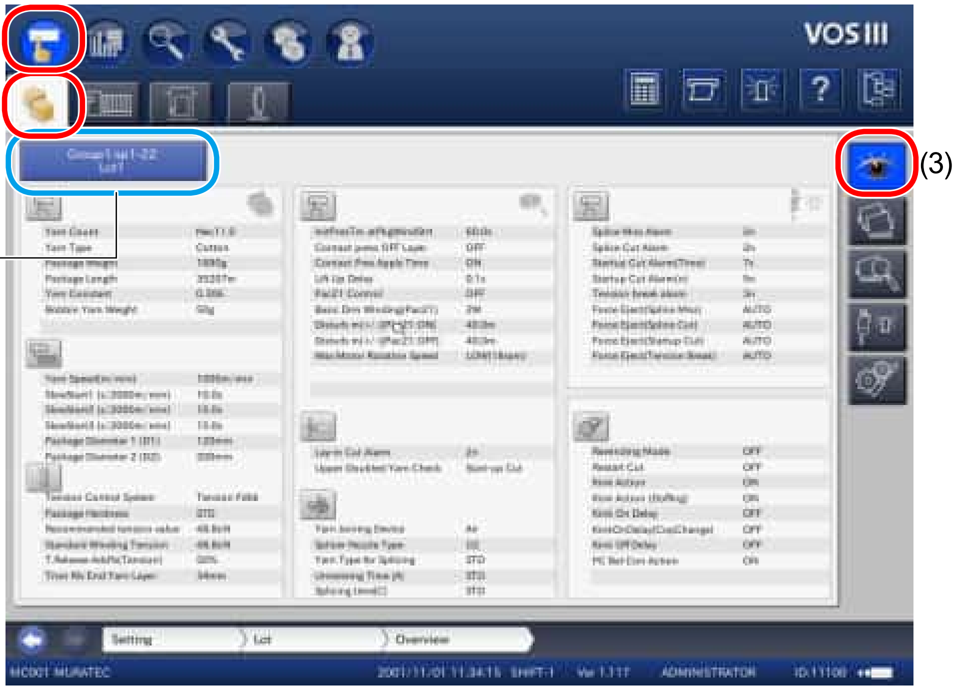
NBSA	No. of Stripper Removal Actions
NC/Y	Ave No. of Nep Cuts Per 100 km Yarn
NCC	No. of Count Fault Cuts
NCOP	No. of Cops
NCTB	No. of CBF Troubles
NDOF	No. of Doffing
NFBE	No. of Ejected Full Bobbins
NFC	No. of Foreign Matter Cuts
NFCM	No. of CMT Alarm Ejections
NFCV	No. of CV Alarm Ejections
NFEJ	No. of Forced Ejections
NFFF	No. of FF Alarm Ejections
NFH	No. of H/SFI Alarm Ejections
NFIP	No. of IPI Alarm Ejections
NFMF	No. of MF & FF-CLUSTER Alarm Ejections
NFMR	No. of Moire Alarm Ejections
NFND	No. of successful CBF Yarn End Finding
NFOT	No. of Other Alarm Ejections
NFPC	No. of PC/CLUSTER/IPM Alarm Ejections
NFSC	No. of Forced Ejections (Splice Cuts)
NFSM	No. of Forced Ejections (Splicing Error)
NFSU	No. of Forced Ejections (Startup)
NFTB	No. of Forced Ejections (Tension Breakage)
NFYC	No. of YCA Alarm Ejections
NFYF	No. of YF Alarm Ejections
NJOI	No. of Successful Splicing
NLC	No. of Long And Thick Palace Cuts
NMCM	No. of Clearer Zero-adjust Error
NMLB	No. of Bobbin Supply Error
NMLC	No. of Lay In Cut Error
NMLW	No. of Splicing Error By No Lower Yarn
NMSL	No. of Splicer error
NMSM	No. of Splice cuts Error
NMSY	No. of System Error
NMUP	No. of Splicing Error By No Upper Yarn
NNC	No. of Nep Cuts
NOC	No. of Other Cuts
NOCW	No. of Spinning Bobbins Waited For
NPAS	No. of CBF Bypassed Bobbins

NSBE	No. of Ejected Bobbins With Residual Yarn
NSC	No. of Slub Cuts
NSMA	No. of Mouth Actions
NSPY	No. of Supply Bobbins
NT/T	No. of CBF Troubles Per 1000 Bobbins
NTB	No. of Tension Breakage
NTC	No. of Thin Place Cuts
NYF	No. of Yarn Fault Cuts
OC/Y	No. of Other Cuts Per 100 km Yarn
OSTM	Other Down Time
PRKG	Production Amount [Kg]
PRLB	Production Amount [Lb]
PRSET	Reset
RNTM	Run Time [min]
RTI%	Ratio of Re-tie [%]
S1TM	Spinning Trouble Time
S12M	Bobbin Yarn Supply Time

S3TM	Spinning Frame Winding Time
S4TM	Spinning Frame Doffing Time
S5TM	Bobbin Yarn Supply Time
SBE%	Ratio of Ejected Bobbins With Residual Yarn [%]
SC/Y	Ave No. of Slub Cuts Per 100 km Yarn
SCTM	Splicing Cycle Time
SEF%	Spindle Efficiency [%]
SFTM	Shift Time
SWTM	Splicing Wait Down Time
TB/Y	Ave No. of Tension Breakages Per 100 km Yarn
TC/Y	Ave No. of Thin Place Cuts Per 100 km Yarn
UOTM	Unit Down Time
WND%	Full Package Ratio [%]
WNDY	Current Wind Length [m]
WNTM	Winding Time
YEF%	Ratio of CBF Yarn End Finding [%]
YF/Y	Ave No. of Yarn Fault Cuts Per 100 km Yarn

<11100> Lot Overview

You can check a summary of the lot settings.


(1)
(2)
(3)
VOSIII
Setting
Lot
Overview

Touch “Switch lot display” to change the lot display.

<11210> Package (production) Basic Settings

You can perform basic settings for package production for each lot. In addition, you can also create a new lot and change the lot name.

<11220> Drum Drive

You can perform all settings for the winding unit’s winding drum for each lot.

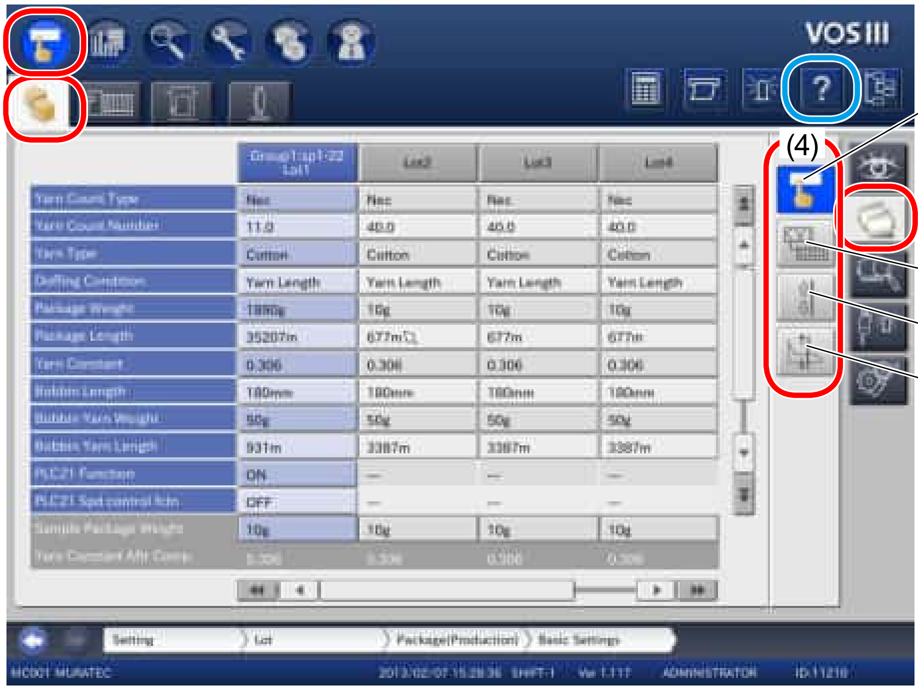
<11240> Tension

You can perform all settings for the winding tension for each lot.

<11250> Tension Manager

You can perform all settings for the tension manger for each lot.

- **After touching (1), (2) and then (3) in order, touch and select one of the icons from (4).**


(1)
(2)
(3)
(4)
VOS III
?
<11210>
<11220>
<11240>
<11250>
Setting
Lot
Package(Production)
Basic Settings
MC001 MURATEC
2013/02/07 15:28:36 SHIFT-1 Ver 1.11T ADMINISTRATOR ID:11210

	Group1:sp1-22 Lot1	Lot2	Lot3	Lot4
Yarn Count Type	Nec	Nec	Nec	Nec
Yarn Count Number	11.0	40.0	40.0	40.0
Yarn Type	Cotton	Cotton	Cotton	Cotton
Doffing Condition	Yarn Length	Yarn Length	Yarn Length	Yarn Length
Package Weight	1890g	10g	10g	10g
Package Length	35207m	677m	677m	677m
Yarn Constant	0.306	0.306	0.306	0.306
Bobbin Length	180mm	180mm	180mm	180mm
Bobbin Yarn Weight	50g	50g	50g	50g
Bobbin Yarn Length	931m	3387m	3387m	3387m
PLC21 Function	ON	—	—	—
PLC21 Spd control fctn	OFF	—	—	—
Sample Package Weight	10g	10g	10g	10g
Yarn Constant Aftr Comp	0.306	0.306	0.306	0.306

* You can check the explanation for each item by touching the help icon.

<11310> Package (quality) Basic Settings

You can perform basic settings for package quality for each lot.

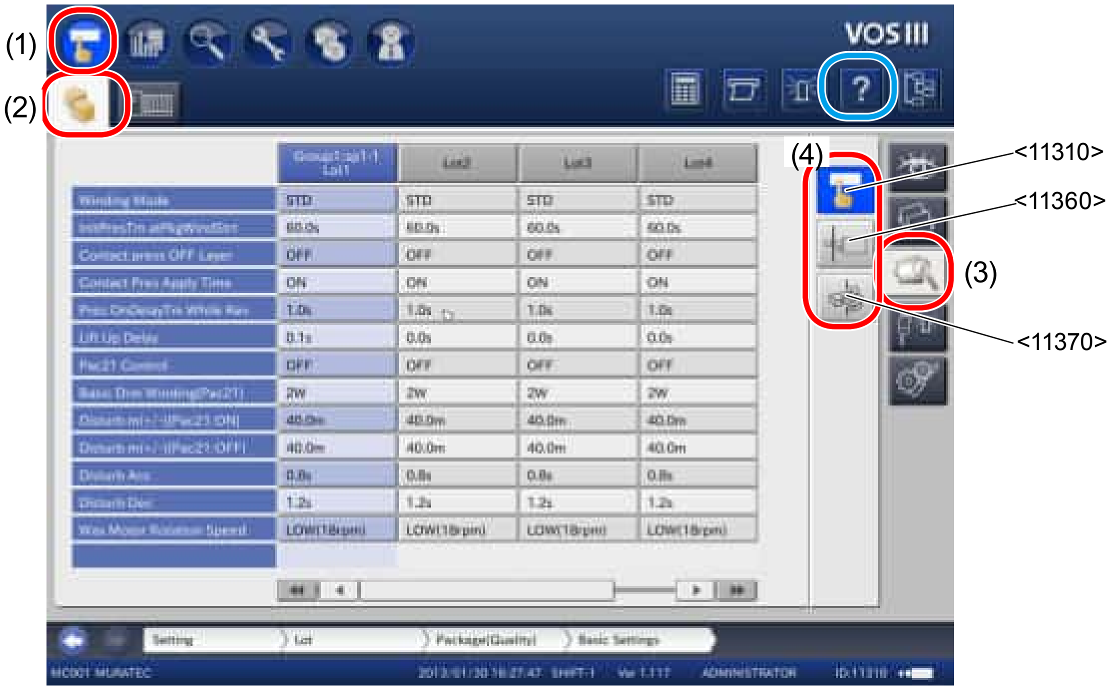
<11360> Clearer

You can perform all settings for the clearer for each lot.

<11370> Splicer

You can perform all settings for the splicer for each lot.

- **After touching (1), (2) and then (3) in order, touch and select one of the icons from (4).**


(1)
(2)
(3)
(4)
VOS III
?
<11310>
<11360>
<11370>
Setting
Lot
Package(Quality)
Basic Settings
MC001 MURATEC
2013/01/30 16:27:47
SHIFT-1
Ver 1.117
ADMINISTRATOR
ID:11310

	Group1:sp1-1 Lot1	Lot2	Lot3	Lot4
Winding Mode	STD	STD	STD	STD
InitPresTm atPkgWindStrt	60.0s	60.0s	60.0s	60.0s
Contact press OFF Layer	OFF	OFF	OFF	OFF
Contact Pres Apply Time	ON	ON	ON	ON
Pres OnDelayTm While Run	1.0s	1.0s	1.0s	1.0s
Lift Up Delay	0.1s	0.0s	0.0s	0.0s
Pac21 Control	OFF	OFF	OFF	OFF
Basic Drm Winding(Pac21)	2W	2W	2W	2W
Disturb m(+/-)(Pac21 ON)	40.0m	40.0m	40.0m	40.0m
Disturb m(+/-)(Pac21 OFF)	40.0m	40.0m	40.0m	40.0m
Disturb Acc	0.8s	0.8s	0.8s	0.8s
Disturb Dec	1.2s	1.2s	1.2s	1.2s
Wax Motor Rotation Speed	LOW(18rpm)	LOW(18rpm)	LOW(18rpm)	LOW(18rpm)

* You can check the explanation for each item by touching the help icon.

<11410> Unit Alarm Basic Settings

You can perform basic settings for the winding unit's alarms for each lot.

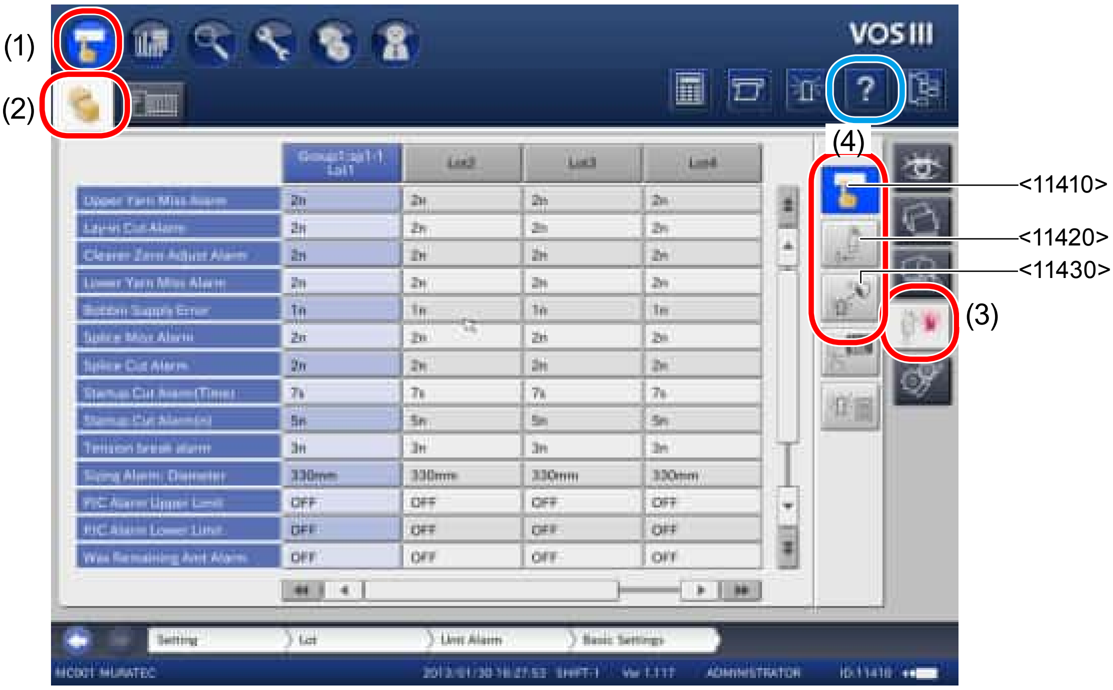
<11420> Unit Alarm Forced Ejection Settings

You can perform forced ejection settings for the winding unit's alarms for each lot.

<11430> Unit Alarm Details Settings

You can perform all settings for the winding unit's alarms for each lot.

- **After touching (1), (2) and then (3) in order, touch and select one of the icons from (4).**



	Group1:sp1-1 Lot1	Lot2	Lot3	Lot4
Upper Yarn Miss Alarm	2n	2n	2n	2n
Lay-in Cut Alarm	2n	2n	2n	2n
Clearer Zero Adjust Alarm	2n	2n	2n	2n
Lower Yarn Miss Alarm	2n	2n	2n	2n
Bobbin Supply Error	1n	1n	1n	1n
Splice Miss Alarm	2n	2n	2n	2n
Splice Cut Alarm	2n	2n	2n	2n
Startup Cut Alarm(Time)	7s	7s	7s	7s
Startup Cut Alarm(n)	5n	5n	5n	5n
Tension break alarm	3n	3n	3n	3n
Sizing Alarm: Diameter	330mm	330mm	330mm	330mm
P/C Alarm Upper Limit	OFF	OFF	OFF	OFF
P/C Alarm Lower Limit	OFF	OFF	OFF	OFF
Wax Remaining Amt Alarm	OFF	OFF	OFF	OFF

Setting 〉 Lot 〉 Unit Alarm 〉 Basic Settings

MC001 MURATEC 2013/01/30 16:27:53 SHIFT-1 Ver 1.11T ADMINISTRATOR ID:11410

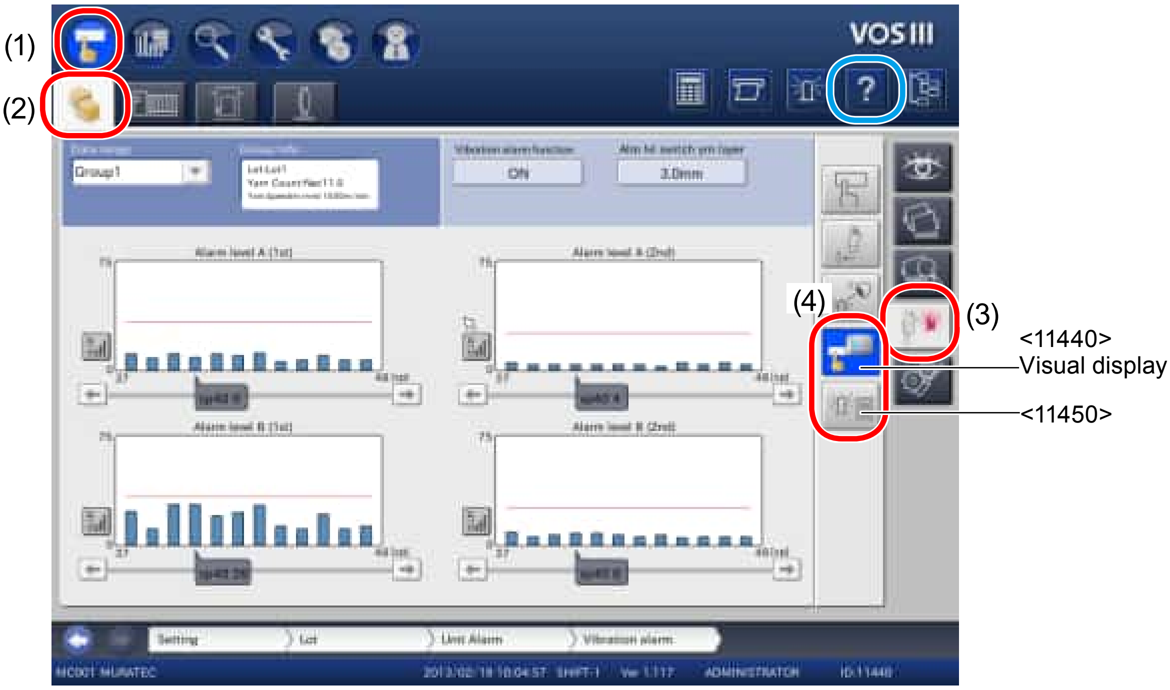
* You can check the explanation for each item by touching the help icon.

<11440> Vibration Alarm Settings (Visual Display)

<11450> Vibration Alalrm Settings

You can perform vibration alarm settings for the winding unit's alarms for each lot.
There are two channels for the vibration alarm settings: A and B. Each has a winding start range (1st) and a stability range (2nd).

- **After touching (1), (2) and then (3) in order, touch and select one of the icons from (4).**


(1)
(2)
(3)
(4)
<11440>
Visual display
<11450>
VOS III
?
Group1
ON
3.0mm
Alarm level A (1st)
Alarm level A (2nd)
Alarm level B (1st)
Alarm level B (2nd)
Setting
Lot
Unit Alarm
Vibration alarm
MURATEC
SHIFT-1
ADMINISTRATOR
ID:11440

* You can check the explanation for each item by touching the help icon.

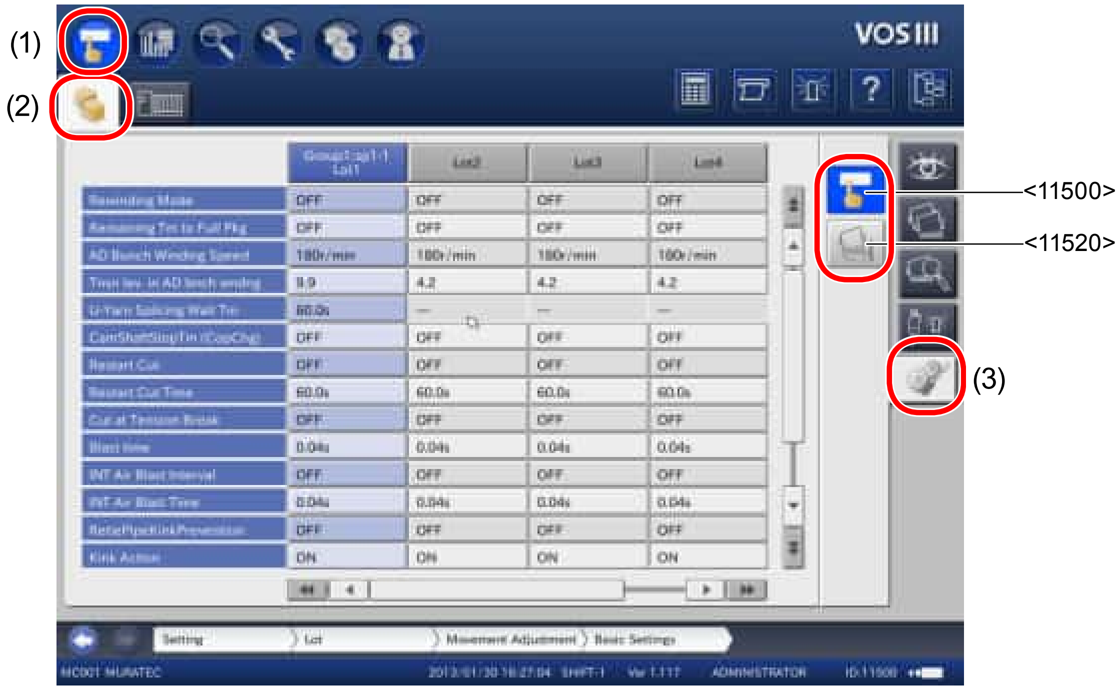
<11500> Winding Unit Operation Adjustment

You can adjust and set each device inside the winding unit for each lot.

<11520> Suction Mouth Operation Adjustment

You can perform adjustment settings for suction mouth operation for each lot.

- **After touching (1), (2) and then (3) in order, touch and select one of the icons from (4).**



	Group1:gp1-1 Lot1	Lot2	Lot3	Lot4
Rewinding Mode	OFF	OFF	OFF	OFF
Remaining Tm to Full Pkg	OFF	OFF	OFF	OFF
AD Bunch Winding Speed	180r/min	180r/min	180r/min	180r/min
Twist lev. in AD bnch wndng	9.9	4.2	4.2	4.2
U-Yarn Splicing Wait Tm	60.0s	—	—	—
CamShaftStopTm (CopChg)	OFF	OFF	OFF	OFF
Restart Cut	OFF	OFF	OFF	OFF
Restart Cut Time	60.0s	60.0s	60.0s	60.0s
Cut at Tension Break	OFF	OFF	OFF	OFF
Blast time	0.04s	0.04s	0.04s	0.04s
INT Air Blast Interval	OFF	OFF	OFF	OFF
INT Air Blast Time	0.04s	0.04s	0.04s	0.04s
RetainPipeKinkPrevention	OFF	OFF	OFF	OFF
Kink Action	ON	ON	ON	ON

Setting 〉 Lot 〉 Movement Adjustment 〉 Basic Settings

MC001 MURATEC 2013/01/30 16:27:04 SHIFT-1 Ver 1.11T ADMINISTRATOR ID:11500

* You can check the explanation for each item by touching the help icon.

<12100> Main Machine Basic Settings

You can set the machine’s operations.

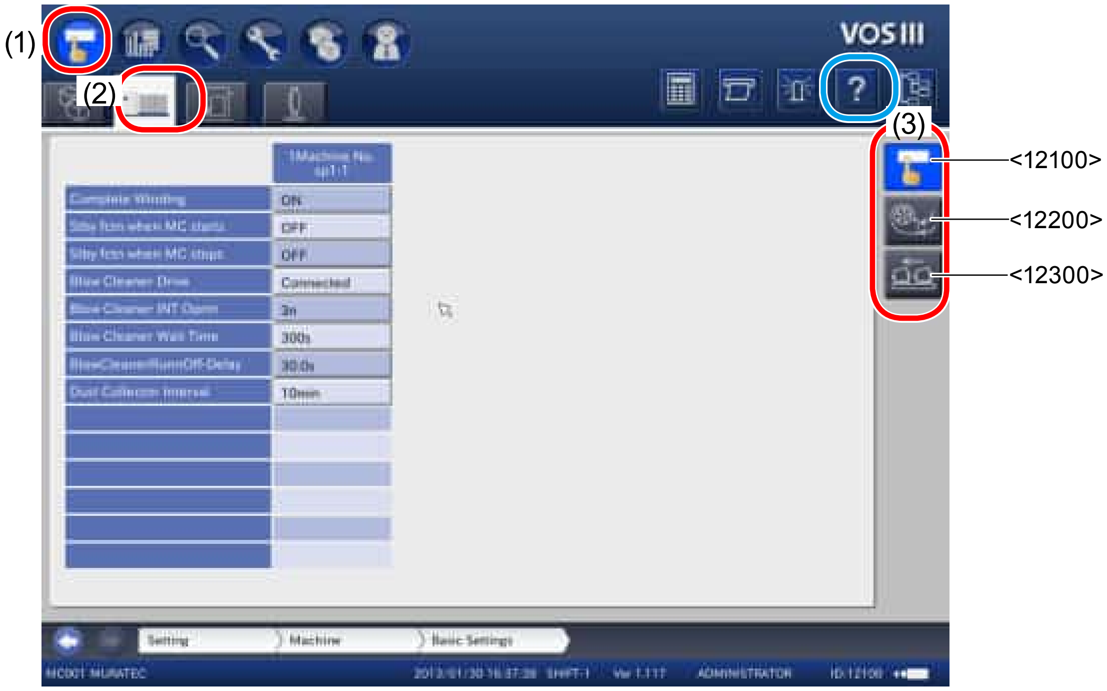
<12200> Static Pressure

You can perform all settings for the static pressure on the blower.

<12300> Package Conveyor

You can perform all settings for the package conveyor.

- **After touching (1) and (2) in order, touch and select one of the icons from (3).**



* You can check the explanation for each item by touching the help icon.

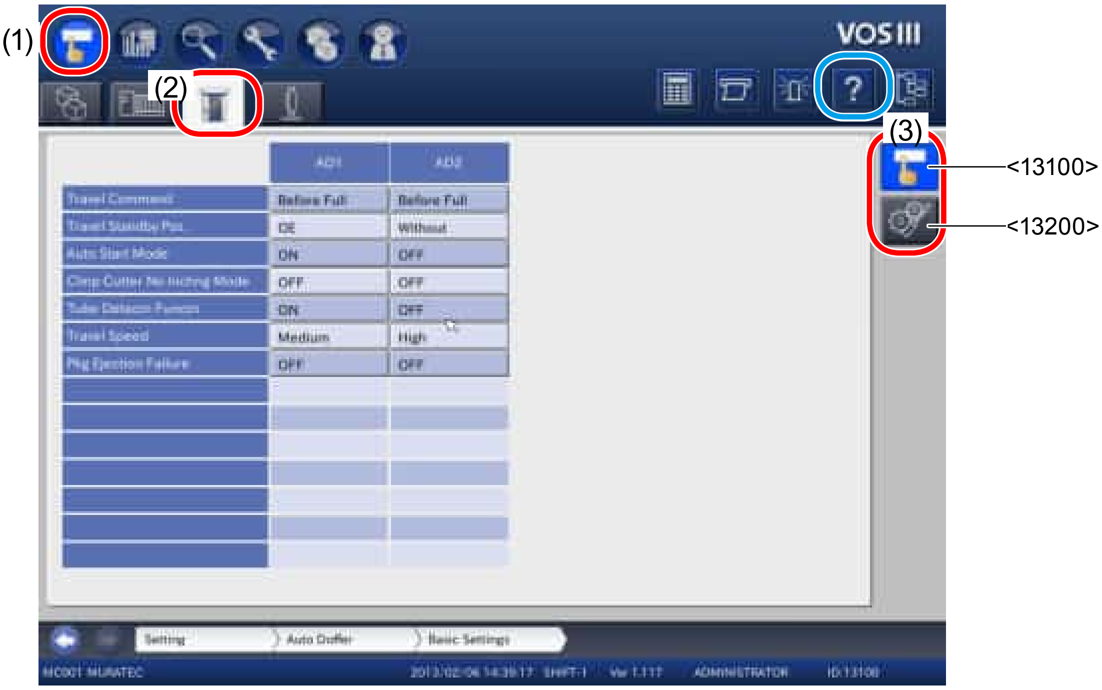
<13100> AD Basic Settings

You can perform basic settings for AD.

<13200> AD Operation Adjustment

You can perform adjustment settings for AD operations.

- **After touching (1) and (2) in order, touch and select one of the icons from (3).**


(1)
(2)
(3)
VOS III
?
<13100>
<13200>
Setting
Auto Doffer
Basic Settings
MC001 MURATEC
2013/02/06 14:39:17
SHIFT-1
Ver 1.117
ADMINISTRATOR
ID:13100

	AD1	AD2
Travel Command	Before Full	Before Full
Travel Standby Pos.	OE	Without
Auto Start Mode	ON	OFF
Clmp Cutter No Inching Mode	OFF	OFF
Tube Detectn Functn	ON	OFF
Travel Speed	Medium	High
Pkg Ejection Failure	OFF	OFF

* You can check the explanation for each item by touching the help icon.

<14100> CBF Basic Settings

You can perform basic settings for CBF.

<14200> Yarn End Finder

You can perform all settings for the yarn end finder.

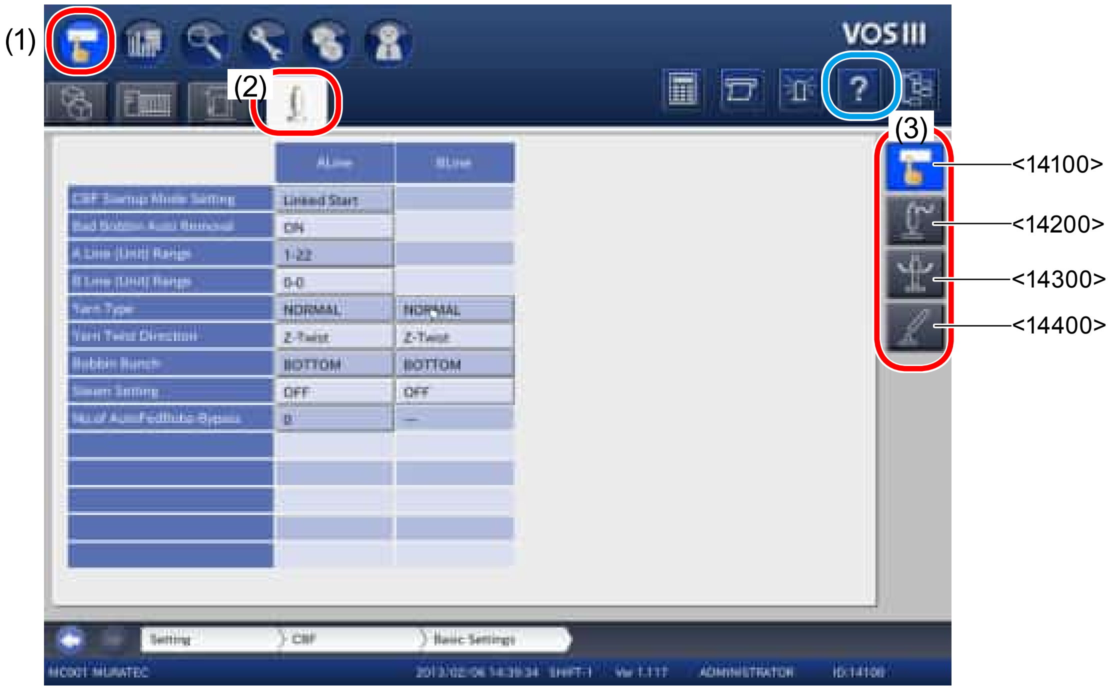
<14300> Bobbin Stripper

You can perform all settings for the bobbin stripper.

<14400> Bobbin Ejector

You can perform all settings for the bobbin ejector.

- **After touching (1) and (2) in order, touch and select one of the icons from (3).**



	A Line	B Line
CBF Startup Mode Setting	Linked Start	
Bad Bobbin Auto Removal	ON	
A Line (Unit) Range	1-22	
B Line (Unit) Range	0-0	
Yarn Type	NORMAL	NORMAL
Yarn Twist Direction	Z-Twist	Z-Twist
Bobbin Bunch	BOTTOM	BOTTOM
Steam Setting	OFF	OFF
No.of AutoFedtube Bypass	0	—

Setting 〉 CBF 〉 Basic Settings

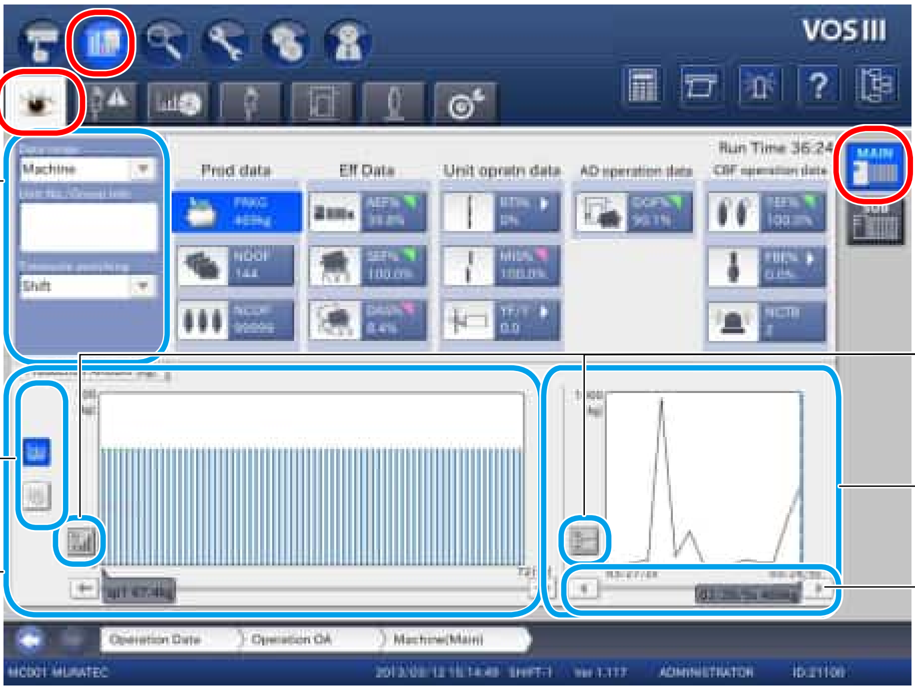
MC001 MURATEC 2013/02/06 14:39:34 SHIFT-1 Ver 1.117 ADMINISTRATOR ID:14100

* You can check the explanation for each item by touching the help icon.

Sec 4 Operation Monitoring Screens

<21100> Machine Operation Data OA (Main)

An overview of the operation data is displayed.


VOS III
Run Time 36:24
MAIN
SUB
Data range
Machine
Unit No./Group info
Timescale switching
Shift
Prod data
Eff Data
Unit opratn data
AD operation data
CBF operation data
Operation Data
Operation OA
Machine(Main)
MC001 MURATEC
ADMINISTRATOR
ID:21100

Switch data unit

Change graph display method

Operation data graph display

Graph options/ target settings

Graph to check changes per shift

Switch display shift/hour

Side Arrows for Data

- **Directional meaning**

⇗	Shift unit data	Current value is above the average for the previous 14 shifts
	Hourly unit data	Current value is above the average for the previous 8 hours
⇒	Shift unit data	No change in current value compared to the average for the previous 14 shifts
	Hourly unit data	No change in current value compared to the average for the previous 8 hours
⇘	Shift unit data	Current value is under the average for the previous 14 shifts
	Hourly unit data	Current value is under the average for the previous 8 hours

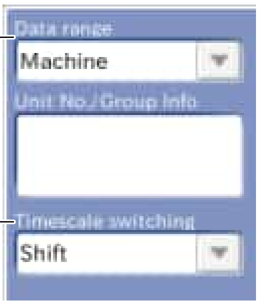
- **Color meaning**

[Green]	Improved	**[Red]**	Worse	**[White]**	No change

Switch Data Unit

Data range
 * Switch to the following unit data
 Machine/Winding unit/Group

Switch time scale
 * Switch to the following unit data
 Shift/Hour/Past 3 shifts/
 Past 3 hours/Test shift

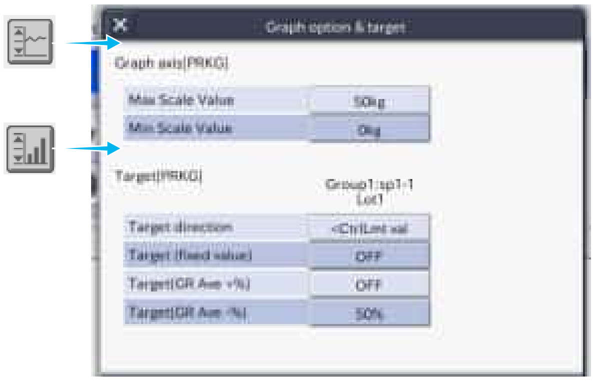

Data range
Machine
Unit No./Group info
Timescale switching
Shift

* The “Unit No./Group Info.” displays an overview of the unit Nos. and group lot information in use.

* Refer to the “Test Shift” section mentioned later on how to use the test shift.

Target Settings

You can change the minimum and maximum scale for the graph by touching the “Graph option & target.”
In addition, you can set the target items in the display.


Graph option & target

Graph axis[PRKG]

Max Scale Value	50kg
Min Scale Value	0kg

Target[PRKG]

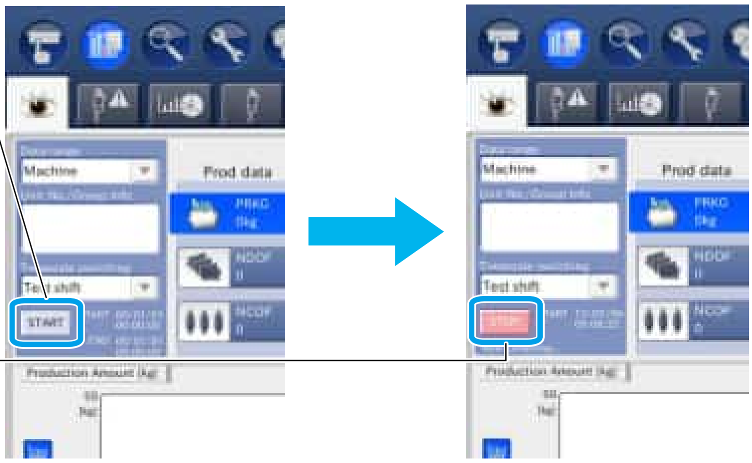
	Group1:sp1-1 Lot1
Target direction	<CtrlLmt val
Target (fixed value)	OFF
Target(GR Ave +%)	OFF
Target(GR Ave -%)	50%

Test Shift

You can select and use the test shift when switching the data unit.
You can collect data for a certain time period, which is different or separate from the normal shift. The screen displays the data from the test shift.

1. **Touch “Test Shift Start.”**

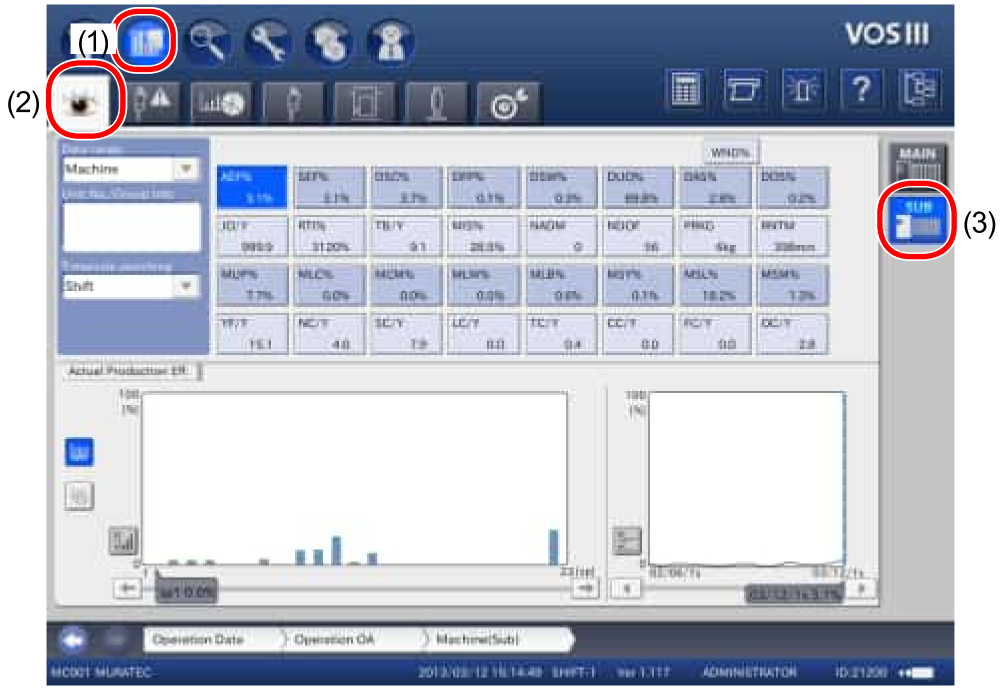
2. **To stop the operation, touch “Test Shift Stop.”**


Machine
Prod data
PRKG
0kg
NDOF
0
NCOF
0
Test shift
START
STOP
Production Amount [kg]

* When setting the timer, the shift will automatically stop after the test shift starts and the set time expires. Refer to Chapter 7, “<65300> Test Shift” for details on the timer settings.

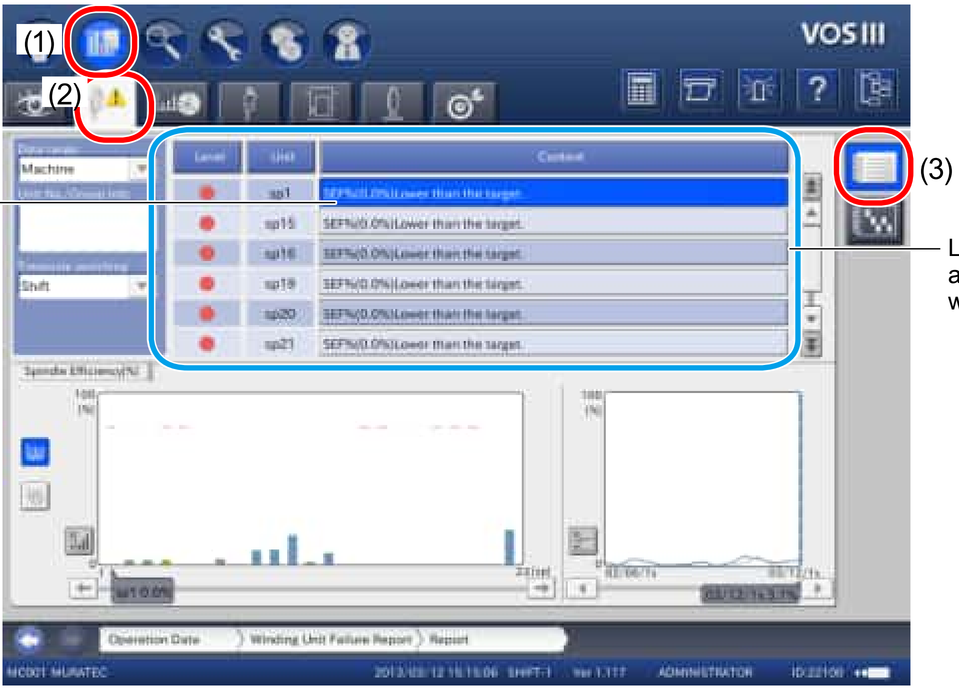
<21200> Machine Operation Data OA (Sub)

Detailed machine operation data is displayed.


(1)
(2)
(3)
VOS III
Machine
Shift
MAIN
SUB
Actual Production Eff.
Operation Data
Operation OA
Machine(Sub)
MC001 MURATEC
ADMINISTRATOR

<22100> Failed Winding Units Report

An overview of comments about unit faults or abnormal conditions is displayed for all data concerning the winding unit.



Level	Unit	Content
●	sp1	SEF%(0.0%)Lower than the target.
●	sp15	SEF%(0.0%)Lower than the target.
●	sp16	SEF%(0.0%)Lower than the target.
●	sp19	SEF%(0.0%)Lower than the target.
●	sp20	SEF%(0.0%)Lower than the target.
●	sp21	SEF%(0.0%)Lower than the target.

Abnormal conditions
* By touching this, a detailed graph is displayed at the bottom of the screen.

List of abnormal winding units

Failed Winding Unit Data

Up to 12 items can be entered and saved for the data on failed winding units. In addition, you can set the target items in the display. Refer to Chapter 7 “<27100> Target,” for more details on the entry and saving procedure.

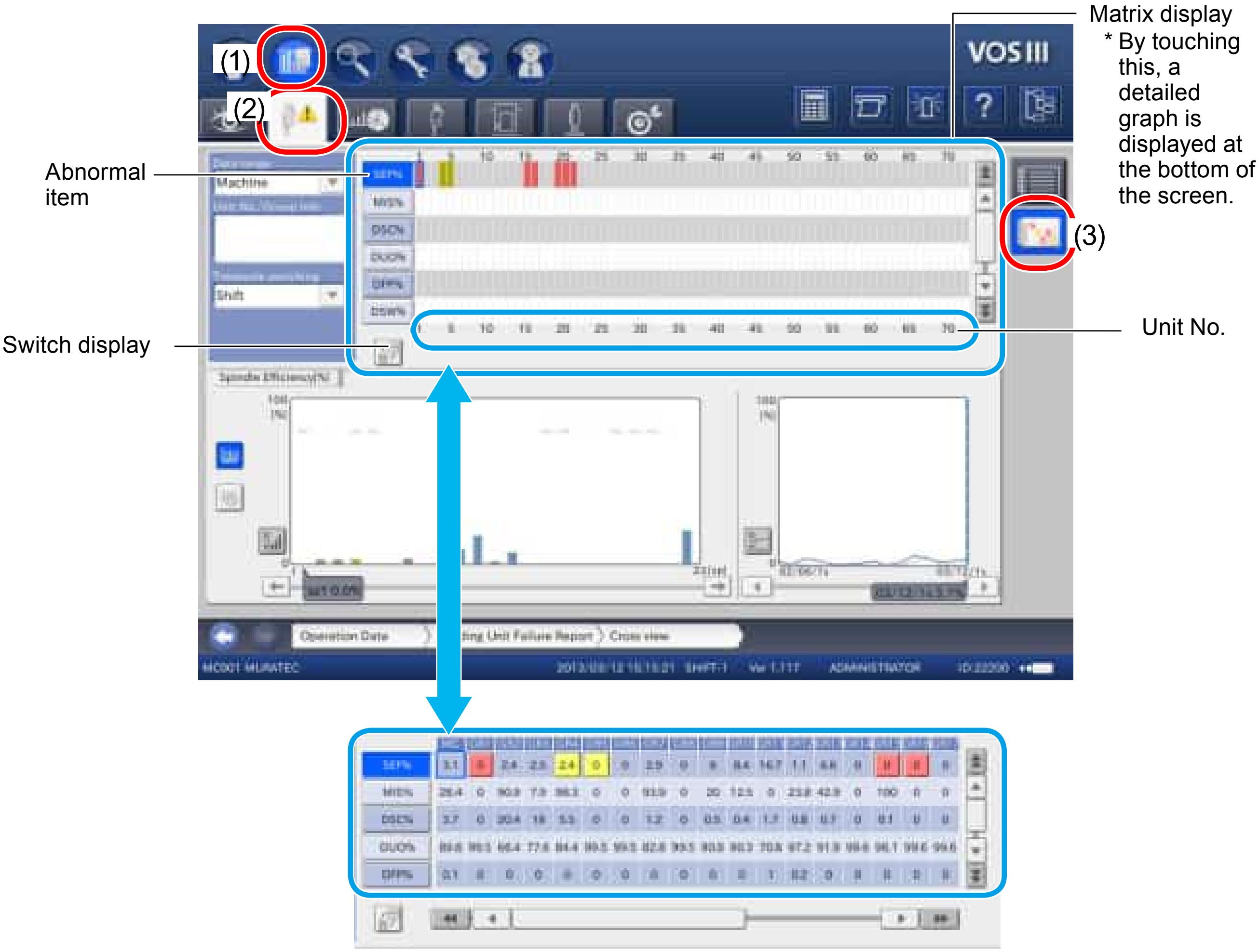
Level Color

The level of failure or abnormality is displayed with a color mark.

Color	Time Scale	Meaning
Red	Shift	The data has exceeded the target setting for 3 consecutive shifts.
	Hour	The data has exceeded the target setting for 3 consecutive hours.
Yellow	Shift	The data has exceeded the target setting for the current shift.
	Hour	The data has exceeded the target setting for the current hour.

<22200> Cross View of Failed Winding Units Report

The faulty winding unit or abnormal conditions, are shown in a visual display using a matrix for all data concerning the winding unit.


Matrix display
* By touching this, a detailed graph is displayed at the bottom of the screen.
(1)
(2)
(3)
VOS III
Abnormal item
Switch display
Unit No.

Cell Color

The level of failure or abnormality is displayed with a color mark.

Color	Time Scale	Meaning
Red	Shift	The data has exceeded the target setting for 3 consecutive shifts.
	Hour	The data has exceeded the target setting for 3 consecutive hours.
Yellow	Shift	The data has exceeded the target setting for the current shift.
	Hour	The data has exceeded the target setting for the current hour.

4
Sec

<23100> Machine Efficiency Analysis

The machine efficiency is analyzed from all operation data.
You can check improvement locations from the breakdown of the overall machine efficiency data.

<23200> Unit Alarm Stop Cause Analysis

The stop cause (DAS%) from the unit alarm is analyzed.
You can check improvement locations from the breakdown of the unit alarms shown in order of frequency.

<23300> Splicing Error Cause Analysis

The cause for the splicing error is analyzed.
You can check improvement locations from the breakdown of the splicing error data.

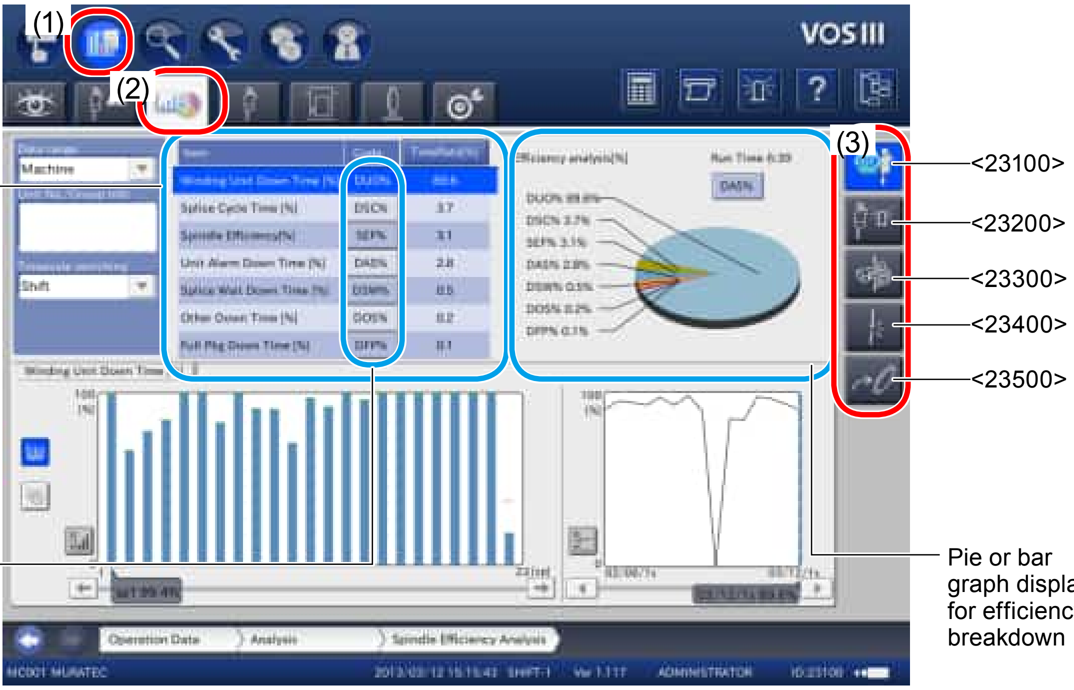
<23400> Yarn Breakage Cause Analysis

The cause for the yarn breakage error is analyzed.
You can check improvement locations from the breakdown of the yarn breakage error data.

<23500> Forced Ejection Cause Analysis

The cause for winding units forced ejection is analyzed.
You can check improvement locations from the breakdown of the forced ejection data.

- **After touching (1) and (2) in order, touch and select one of the icons from (3).**



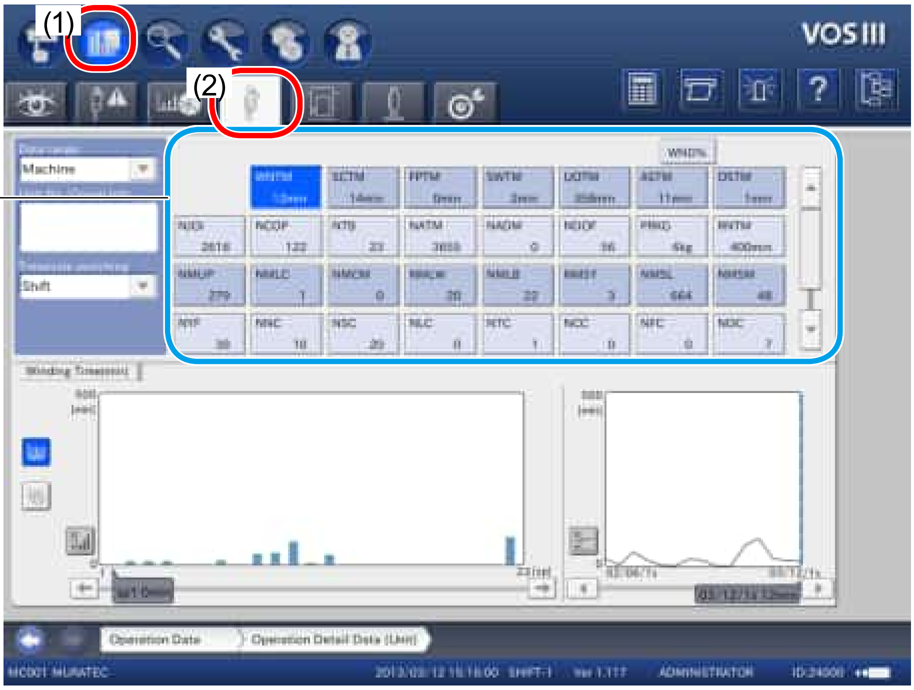
List of details

A detailed graph for the corresponding data is displayed at the bottom of the screen by touching the code.

Pie or bar graph display for efficiency breakdown

<24000> Detailed Operation Data (Winding units)

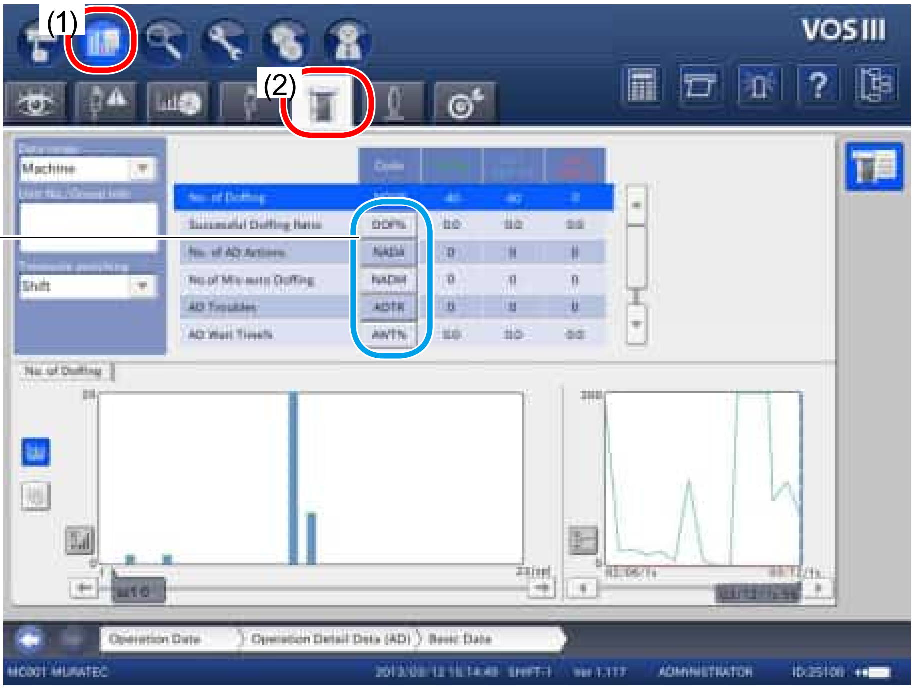
Detailed operation data is displayed for the winding unit.



A detailed graph for the corresponding data is displayed at the bottom of the screen by touching the code.

<25100> Detailed Operation Data (AD)

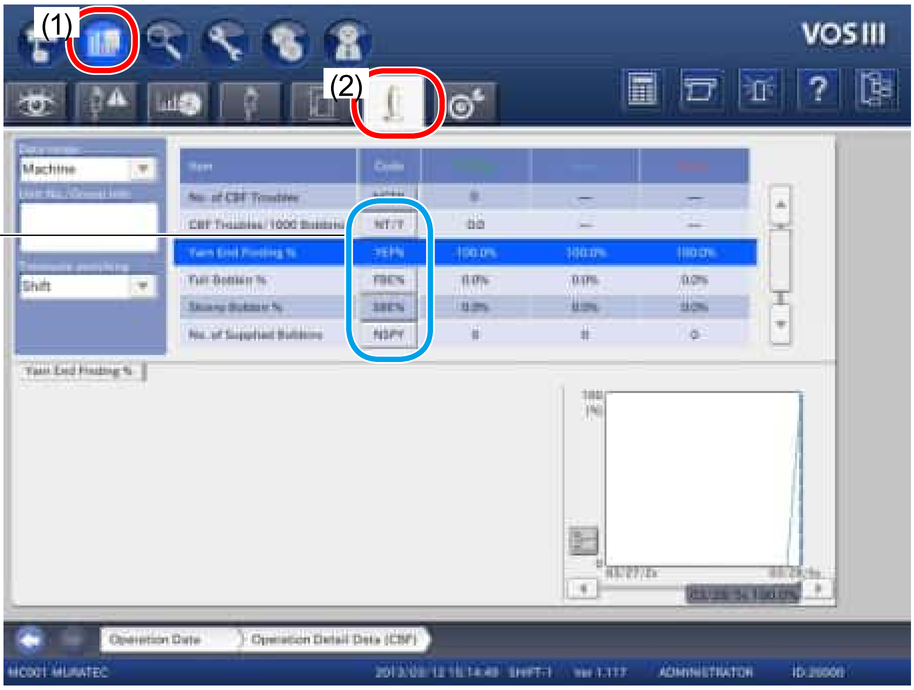
Detailed operation data is displayed for AD.



A detailed graph for the corresponding data is displayed at the bottom of the screen by touching the code.

<26000> Detailed Operation Data (CBF)

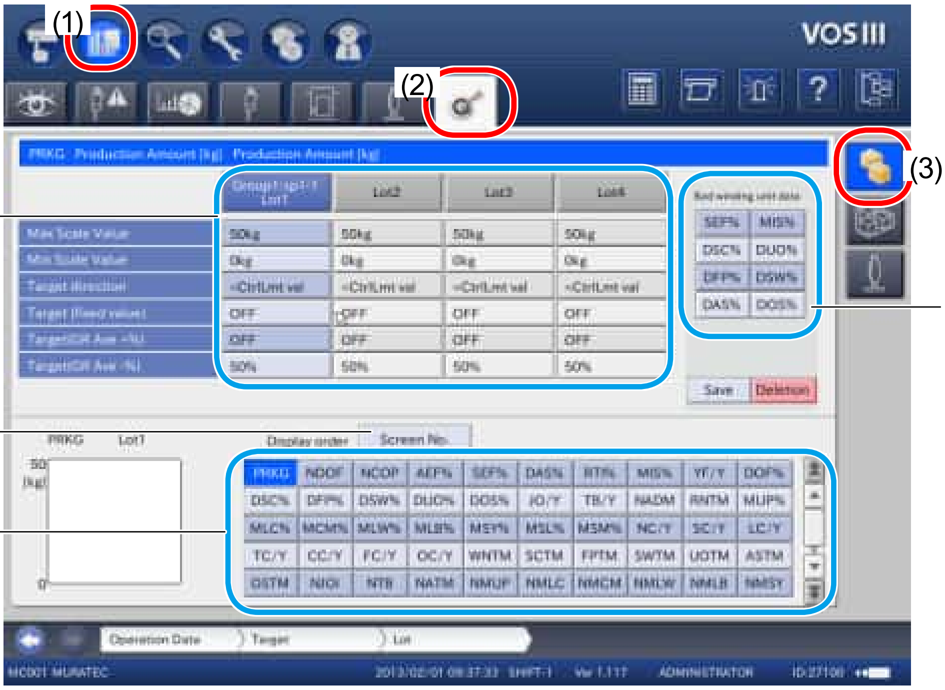
Detailed operation data is displayed for CBF.


(1)
(2)
VOS III
Machine
Shift
No. of CBF Troubles
CBF Troubles / 1000 Bobbins
Yarn End Finding %
Full Bobbin %
Skewy Bobbin %
No. of Supplied Bobbins
NT/T
YEF%
FBE%
SBE%
NSPY
Yarn End Finding %
Operation Data
Operation Detail Data (CBF)
MC001 MURATEC
ADMINISTRATOR
ID 26000

A detailed graph for the corresponding data is displayed at the bottom of the screen by touching the code.

<27100> Target

The data targets for all operation data can be set for each lot.


(1)
(2)
(3)
VOS III
Lot2
Lot3
Lot4
Max Scale Value
Min Scale Value
Target direction
50kg
0kg
<CtrlLmt val
OFF
50%
SEF%
MIS%
DSC%
DUO%
DFP%
DSW%
DAS%
DOS%
Save
Deletion
PRKG
Lot1
Display order
Screen No.
PRKG NOOF NCOP AEF% SEF% DAS% RTF% MIS% YF/Y DOF%
DSC% DFP% DSW% DUO% DOS% IO/Y TB/Y NADM RNTM MUP%
MLC% MCM% MLW% MLB% MSY% MSL% MSM% NC/Y SC/Y LC/Y
TC/Y CC/Y FC/Y OC/Y WNTM SCTM FPTM SWTM UOTM ASTM
OSTM NIOI NTB NATM NMUP NMLC NMCM NMLW NMLB NMSY
Operation Data
Target
Lot
MC001 MURATEC
ADMINISTRATOR
ID 27100

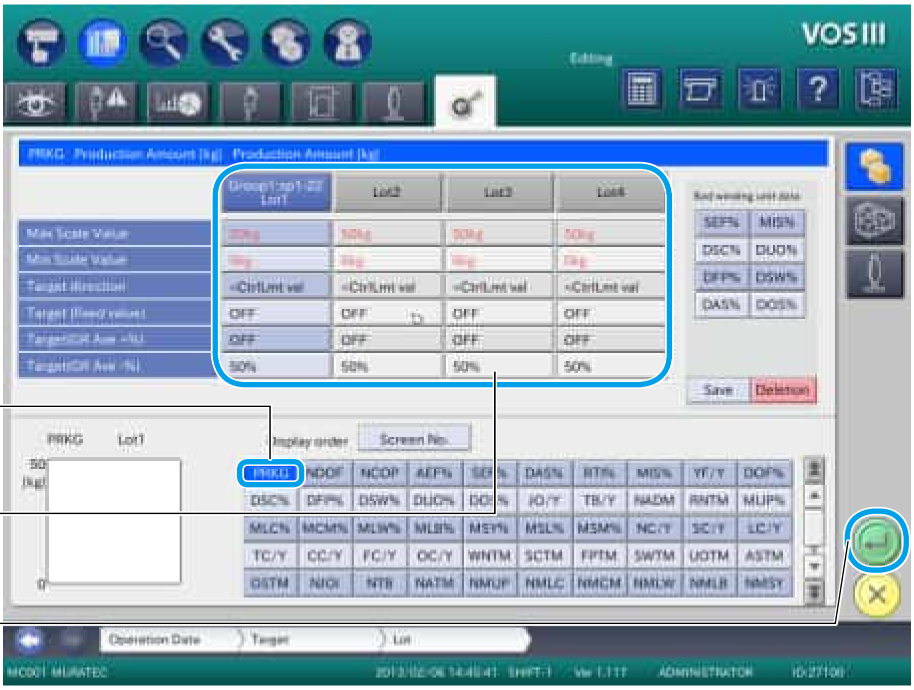
Target settings

Data entry and saving for failed winding units (Max. 12 items)

Switch data display

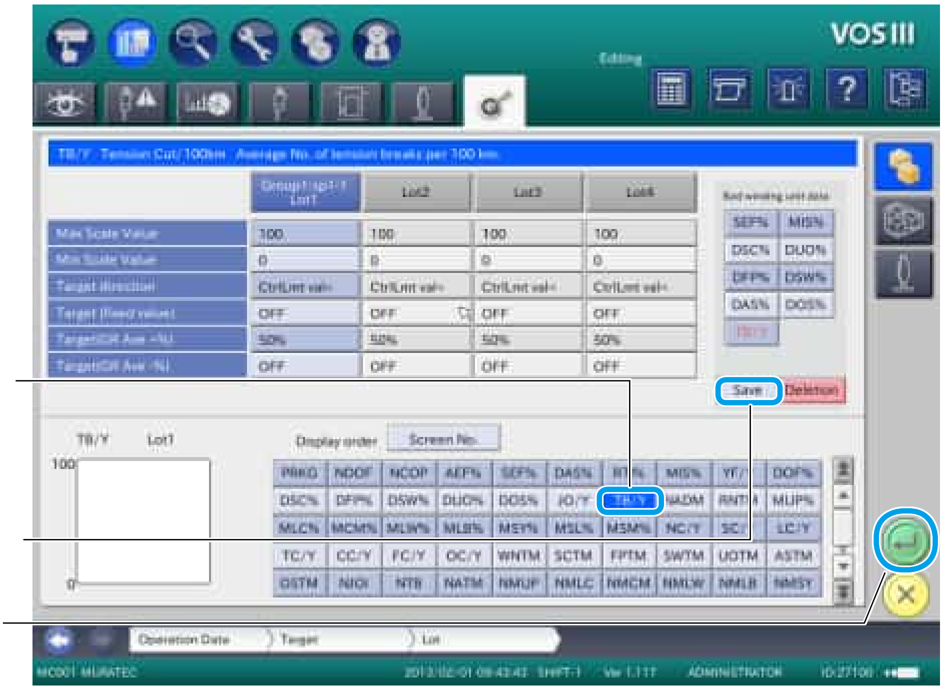
Data selection

Target Settings


VOS III
Editing
PRKG Production Amount [kg] Production Amount [kg]
Lot2
Lot3
Lot4
Save
Deletion
Display order
Screen No.
PRKG
Lot1
Operation Data
Target
Lot

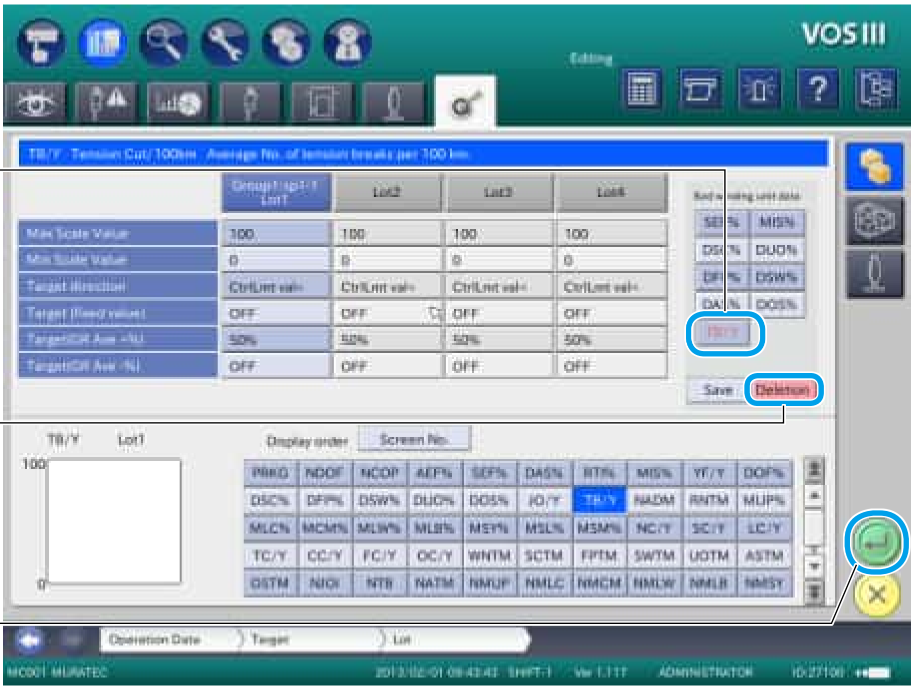
1. Touch the target you want to set.
2. Set the target for each lot.
3. Touch “Confirm.”

Data Entry and Saving for Failed Winding Units


VOS III
Editing
TB/Y Tension Cut/100km Average No. of tension breaks per 100 km
Lot2
Lot3
Lot4
Save
Deletion
Display order
Screen No.
TB/Y
Lot1
Operation Data
Target
Lot

1. Touch the data you want to enter and save.
2. Touch “Data Save.”
3. Touch “Confirm.”

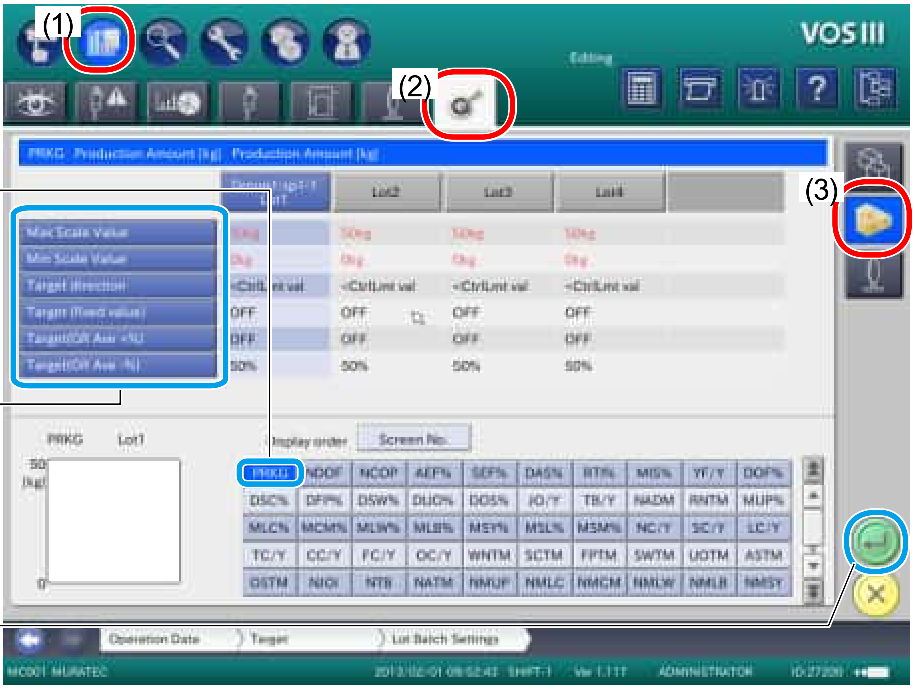
Data Deletion for Failed Winding Units



1. **Touch the target you want to delete.**
2. **Touch "Deletion."**
3. **Touch "Confirm."**

<27200> Target Batch Settings

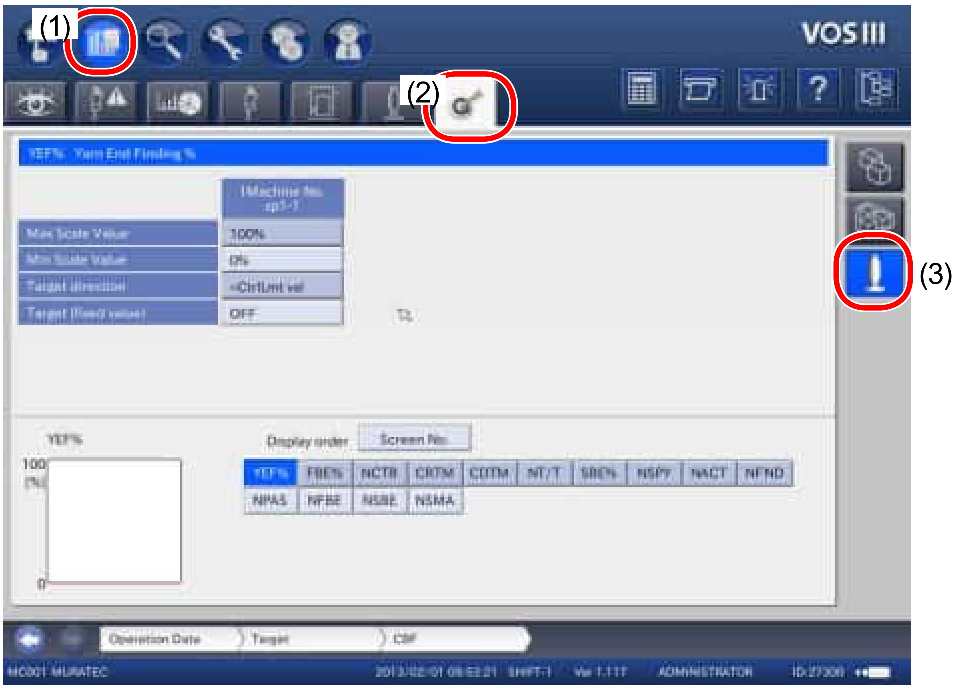
The targets for all operation data can be set in one batch for all lots.



1. **Touch the target you want to set.**
2. **Touch the "batch setting" and set the targets.**
3. **Touch "Confirm."**

<27300> Target CBF Settings

The data targets for the CBF operation data can be set individually.



YEF% Yarn End Finding %

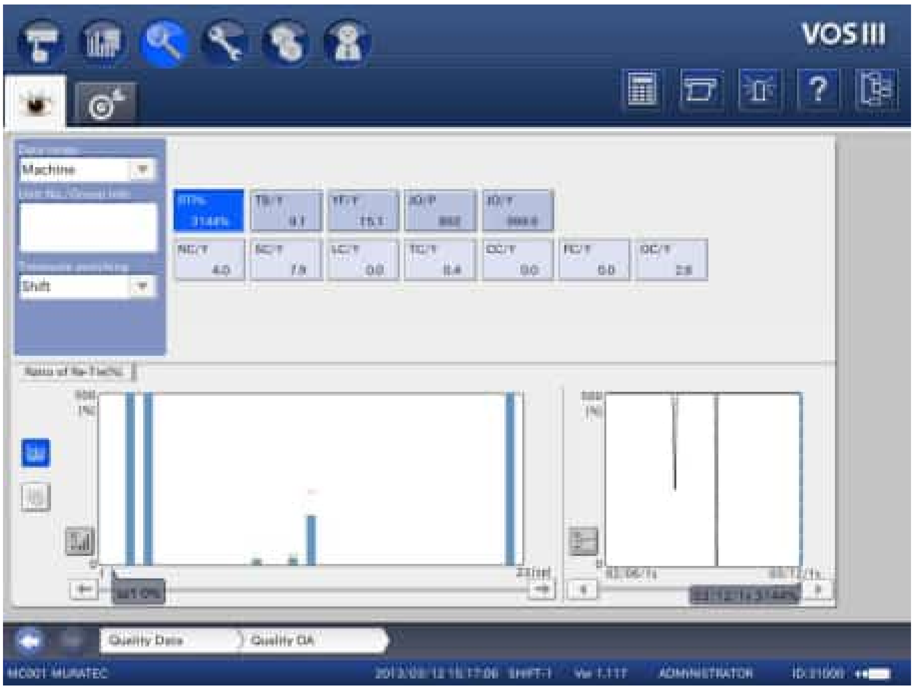
	[Machine No. sp1-1
Max Scale Value	100%
Min Scale Value	0%
Target direction	<CtrlLmt val
Target (Fixed value)	OFF

(1)
(2)
(3)
VOS III
YEF%
100
(%)
0
Display order
Screen No.
YEF%
FBE%
NCTR
CRTM
CDTM
NT/T
SBE%
NSPY
NACT
NFND
NPAS
NFBE
NSBE
NSMA
Operation Data
Target
CBF
MC001 MURATEC
2013/02/01 09:53:21
SHIFT-1
Ver 1.11T
ADMINISTRATOR
ID:27300

Sec 5 Quality Screens

<31000> Quality OA

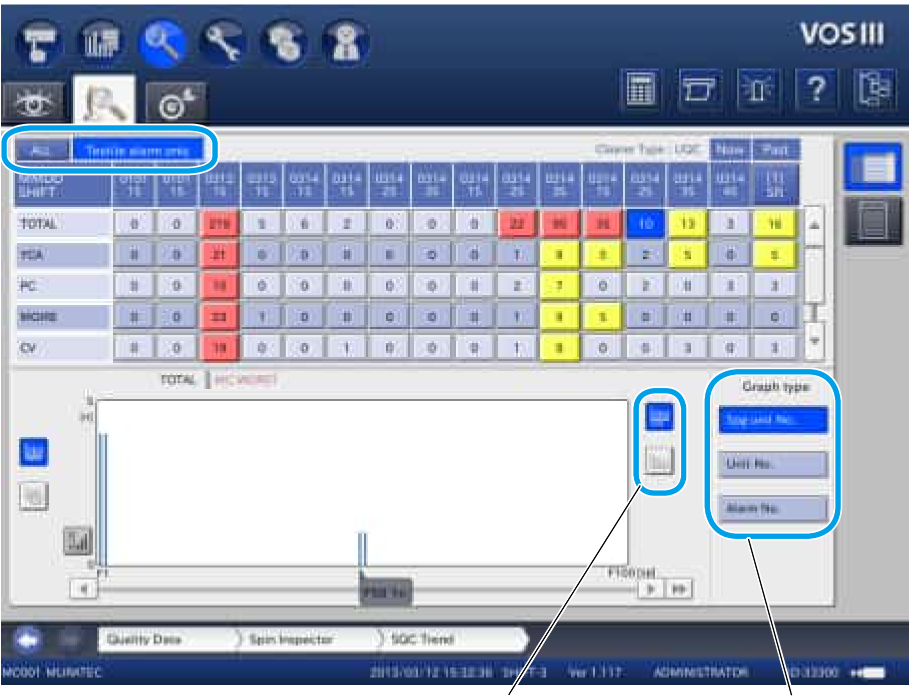
The code, for the data that is closely tied with yarn quality, is displayed.


VOS III
Machine
Shift
Quality Data
Quality OA
MC001 MURATEC
ADMINISTRATOR

<33200> SQC (Spinner Quality Control) Trends

The defective bobbin alarms that occur and the cutting data for each shift is displayed in a matrix showing the frequency. The data display colors for the matrix can be changed using the target settings.

* This screen displays when using a spin inspector specification.


VOS III
All
TOTAL
FDA
PC
MORE
CV
Graph type
Quality Data
Spin Inspector
SQC Trend
MC001 MURATEC
ADMINISTRATOR

Switch display

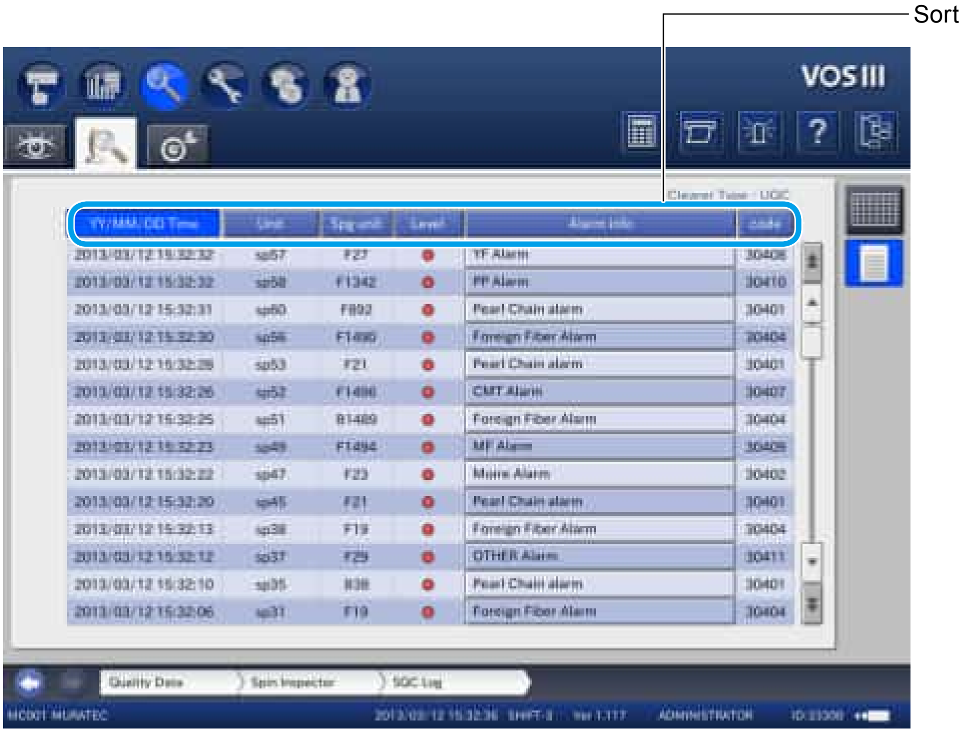
The graph display settings can be changed to descending order or the winding unit number order.

The graph can be changed to a spinning unit number based graph, a winding unit based graph or an alarm based graph.

<33300> SQC (Spinner Quality Control) Log

The alarm history for the defective bobbins, which are set to be removed, is displayed in chronological order. Spinning unit numbers that have been subject to multiple alarms can be color coded for easy identification.

* This screen displays when using a spin inspector specification.



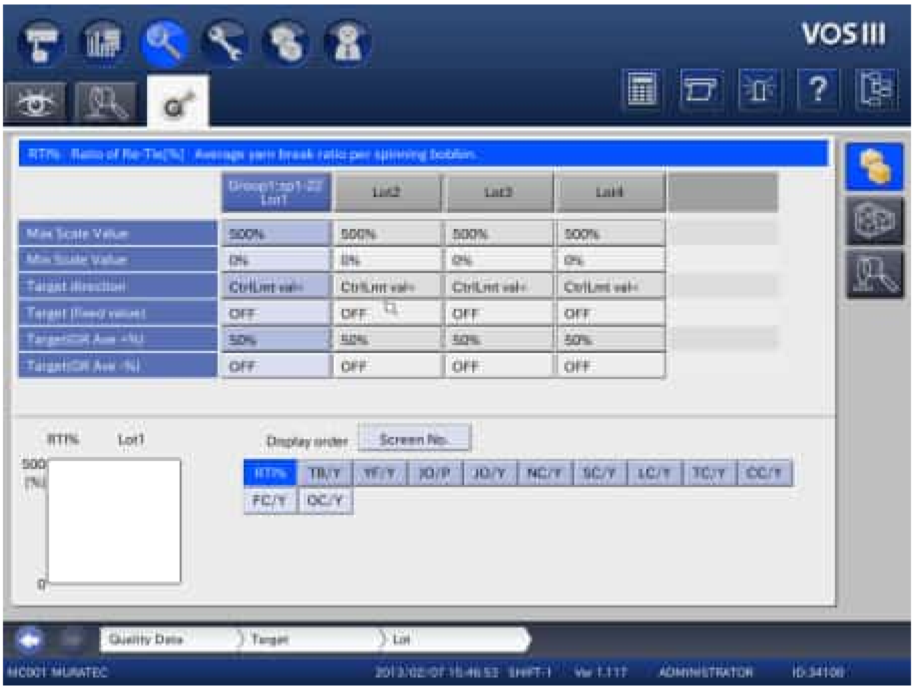
YY/MM/DD Time	Unit	Spg unit	Level	Alarm info	code
2013/03/12 15:32:32	sp57	F27	●	YF Alarm	30408
2013/03/12 15:32:32	sp58	F1342	●	PP Alarm	30410
2013/03/12 15:32:31	sp60	F892	●	Pearl Chain alarm	30401
2013/03/12 15:32:30	sp56	F1490	●	Foreign Fiber Alarm	30404
2013/03/12 15:32:28	sp53	F21	●	Pearl Chain alarm	30401
2013/03/12 15:32:26	sp52	F1498	●	CMT Alarm	30407
2013/03/12 15:32:25	sp51	B1489	●	Foreign Fiber Alarm	30404
2013/03/12 15:32:23	sp49	F1494	●	MF Alarm	30409
2013/03/12 15:32:22	sp47	F23	●	Moire Alarm	30402
2013/03/12 15:32:20	sp45	F21	●	Pearl Chain alarm	30401
2013/03/12 15:32:13	sp38	F19	●	Foreign Fiber Alarm	30404
2013/03/12 15:32:12	sp37	F29	●	OTHER Alarm	30411
2013/03/12 15:32:10	sp35	B38	●	Pearl Chain alarm	30401
2013/03/12 15:32:06	sp31	F19	●	Foreign Fiber Alarm	30404

MC001 MURATEC 2013/03/12 15:32:36 SHIFT-3 Ver 1.117 ADMINISTRATOR ID:33300

* Use the sort button to change the display order according to the alarm, winding unit No. or spinning unit No.

<34100> Target Lot

The data targets for all quality related data can be set for each group.
Refer to Chapter 7 “<27100> Target Settings,” for more details on the setting method.



RT% : Ratio of Re-Tie[%] : Average yarn break ratio per spinning bobbin.

	Group1:sp1-22 Lot1	Lot2	Lot3	Lot4	
Max Scale Value	500%	500%	500%	500%	
Min Scale Value	0%	0%	0%	0%	
Target direction	Ctrl.Lmt val+	Ctrl.Lmt val+	Ctrl.Lmt val+	Ctrl.Lmt val+	
Target (Fixed value)	OFF	OFF	OFF	OFF	
Target(Of Ave +%)	50%	50%	50%	50%	
Target(Of Ave -%)	OFF	OFF	OFF	OFF	

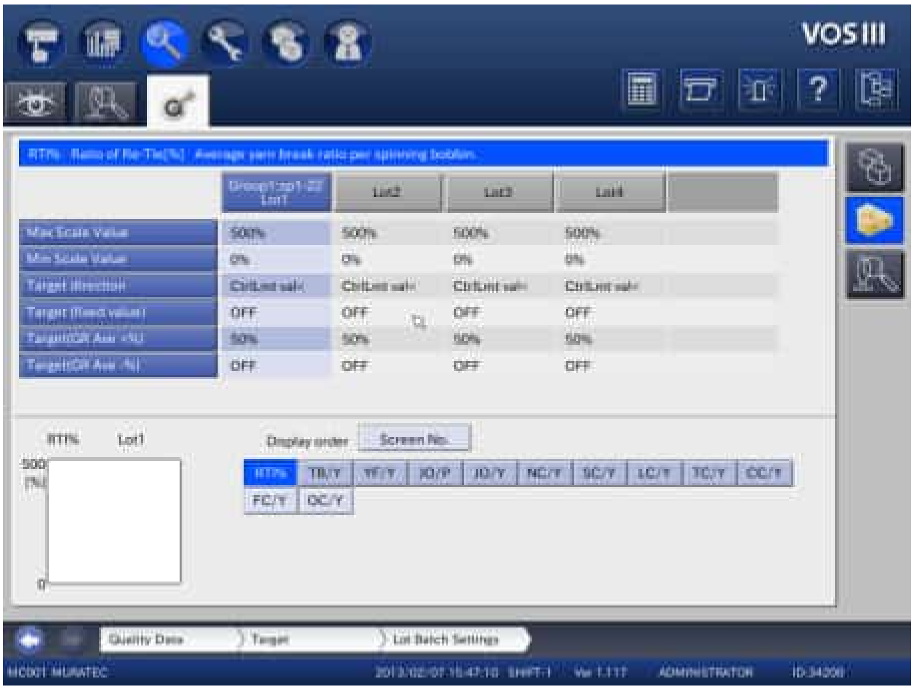
Display order: Screen No.

RT% TB/Y YF/Y JO/P JO/Y NC/Y SC/Y LC/Y TC/Y CC/Y FC/Y OC/Y

MC001 MURATEC 2013/02/07 15:46:53 SHIFT-1 Ver 1.117 ADMINISTRATOR ID:34100

<34200> Target Lot Batch

The data targets for all quality related data can be set in one batch for all lots.
Refer to Chapter 7 “<27200> Target Batch Settings,” for more details on the setting method.


VOS III

RT% Ratio of Re-Tie[%] Average yarn break ratio per spinning bobbin

	Group1:sp1-22 Lot1	Lot2	Lot3	Lot4	
Max Scale Value	500%	500%	500%	500%	
Min Scale Value	0%	0%	0%	0%	
Target direction	Ctrl.mt val<	Ctrl.mt val<	Ctrl.mt val<	Ctrl.mt val<	
Target (fixed value)	OFF	OFF	OFF	OFF	
Target(Gr Ave +%)	50%	50%	50%	50%	
Target(Gr Ave -%)	OFF	OFF	OFF	OFF	

RT% Lot1

500 [%] 0

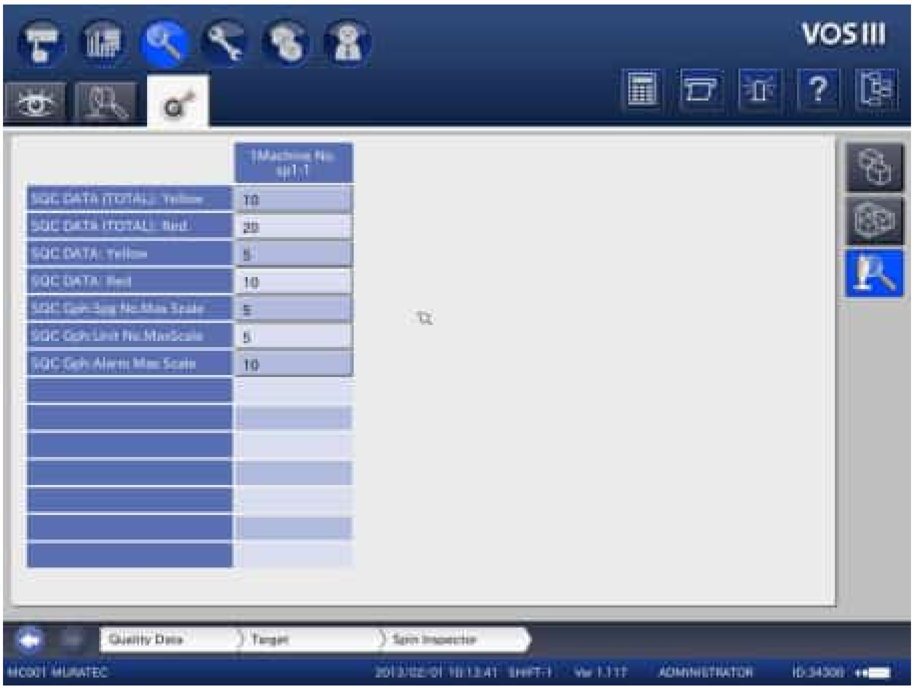
Display order Screen No.

RT%
TB/Y
YF/Y
JO/P
JO/Y
NC/Y
SC/Y
LC/Y
TC/Y
CC/Y
FC/Y
OC/Y
Quality Data
Target
Lot Batch Settings

MC001 MURATEC 2013/02/07 15:47:10 SHIFT-1 Ver 1.117 ADMINISTRATOR ID:34200

<34300> Target Spin Inspector

The scale for the target and graph can be changed on the SQC trends and SQC log screens.
* This screen displays when using a spin inspector specification.


VOS III

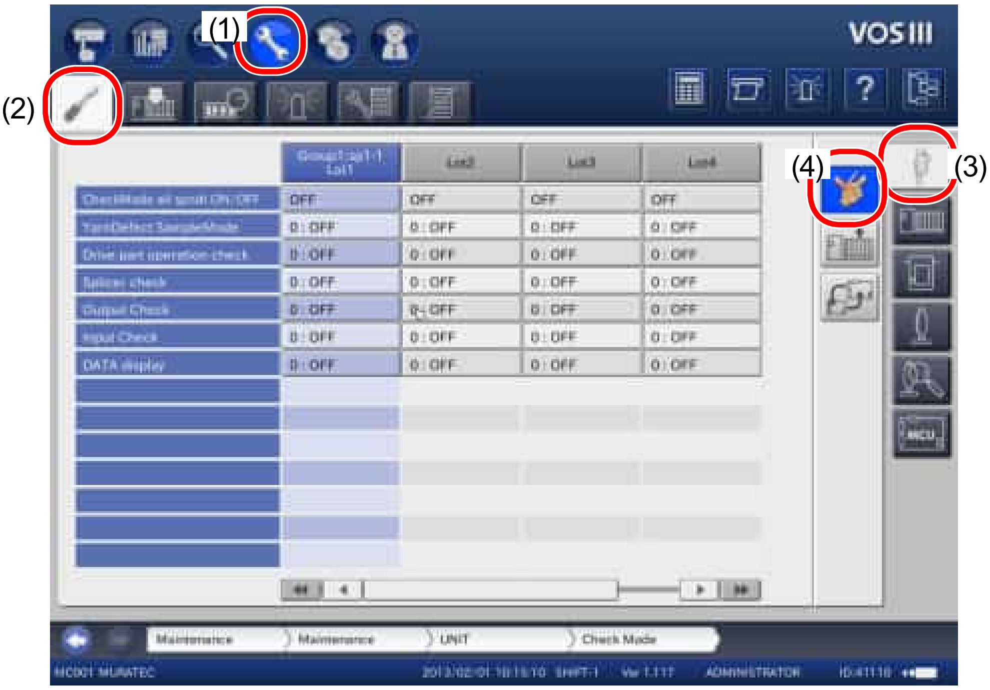
	1Machine No sp1:1
SQC DATA (TOTAL): Yellow	10
SQC DATA (TOTAL): Red	20
SQC DATA: Yellow	5
SQC DATA: Red	10
SQC Gph Spg No.Max Scale	5
SQC Gph Unit No.MaxScale	5
SQC Gph Alarm Max Scale	10

Quality Data
Target
Spin Inspector

MC001 MURATEC 2013/02/01 10:13:41 SHIFT-1 Ver 1.117 ADMINISTRATOR ID:34300

<41110> Unit Check Mode

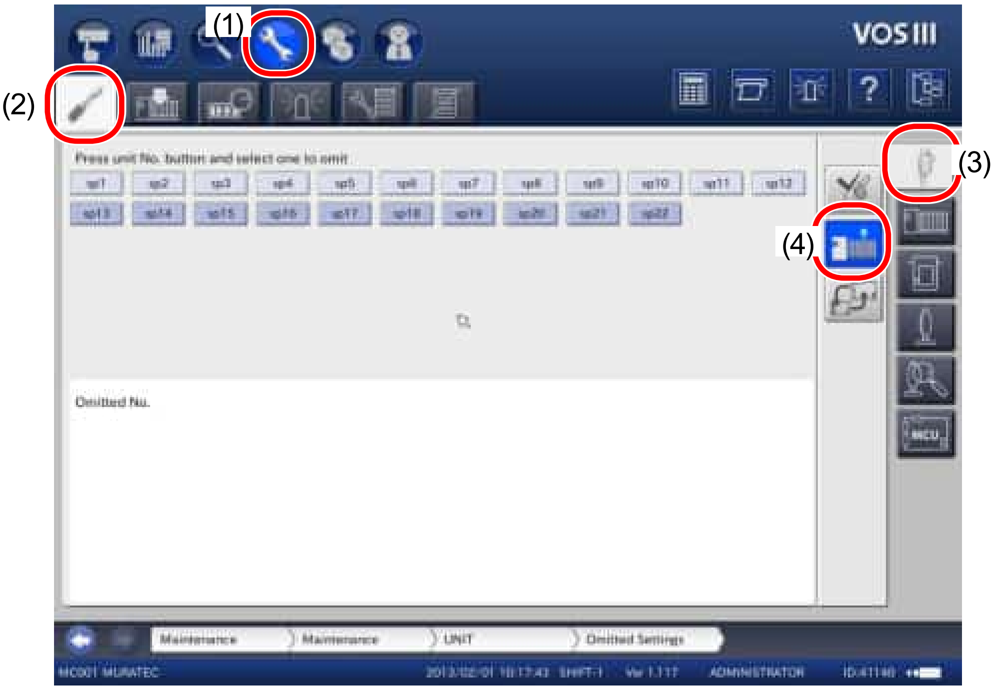
All check mode settings can be performed for the winding unit.
The check mode for the winding unit can be set and used with each unit or with each group.
For details, refer to Chapter 3.


(1)
(2)
(3)
(4)
VOS III
?
Maintenance
Maintenance
UNIT
Check Mode
MC001 MURATEC
2013/02/01 10:15:10 SHIFT-1
Ver 1.117
ADMINISTRATOR
ID:41110

	Group1:sp1-1 Lot1	Lot2	Lot3	Lot4
CheckMode all spndl ON/OFF	OFF	OFF	OFF	OFF
YarnDefect SampleMode	0 : OFF	0 : OFF	0 : OFF	0 : OFF
Drive part operation check	0 : OFF	0 : OFF	0 : OFF	0 : OFF
Splicer check	0 : OFF	0 : OFF	0 : OFF	0 : OFF
Output Check	0 : OFF	0 : OFF	0 : OFF	0 : OFF
Input Check	0 : OFF	0 : OFF	0 : OFF	0 : OFF
DATA display	0 : OFF	0 : OFF	0 : OFF	0 : OFF

<41140> Omit Winding Unit Setting

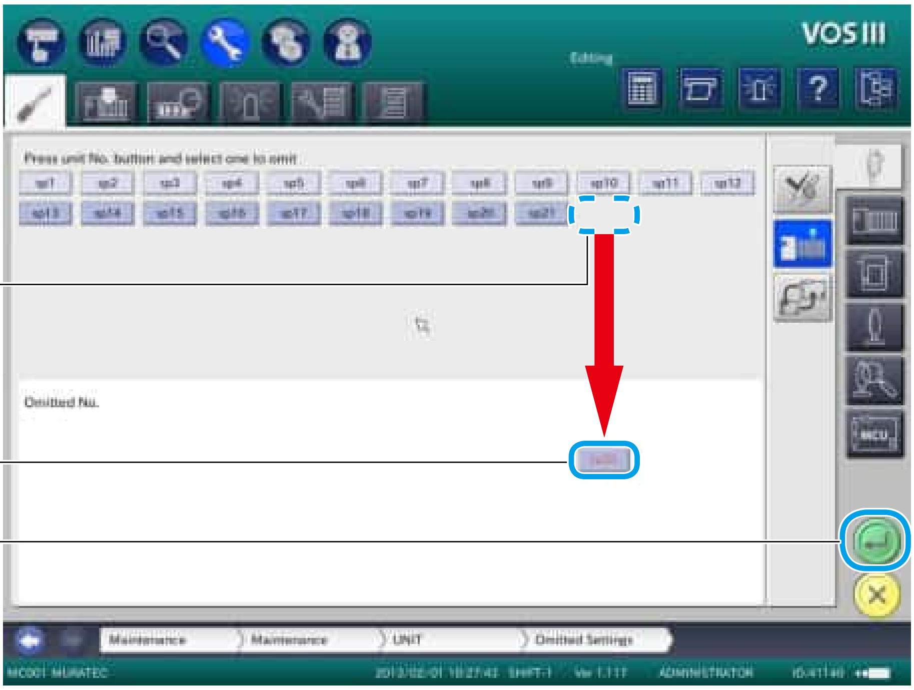
You can set the winding unit to be either omitted or cancelled.


(1)
(2)
(3)
(4)
VOS III
?
sp1
sp2
sp3
sp4
sp5
sp6
sp7
sp8
sp9
sp10
sp11
sp12
sp13
sp14
sp15
sp16
sp17
sp18
sp19
sp20
sp21
sp22
Maintenance
Maintenance
UNIT
Omitted Settings
MC001 MURATEC
2013/02/01 10:17:43 SHIFT-1
Ver 1.117
ADMINISTRATOR
ID:41140

Press unit No. button and select one to omit

Omitted No.

Omit Winding Unit Setting


VOS III
Editing
sp1
sp2
sp3
sp4
sp5
sp6
sp7
sp8
sp9
sp10
sp11
sp12
sp13
sp14
sp15
sp16
sp17
sp18
sp19
sp20
sp21
Omitted No.
Maintenance
Maintenance
UNIT
Omitted Settings
MC001 MURATEC
ADMINISTRATOR

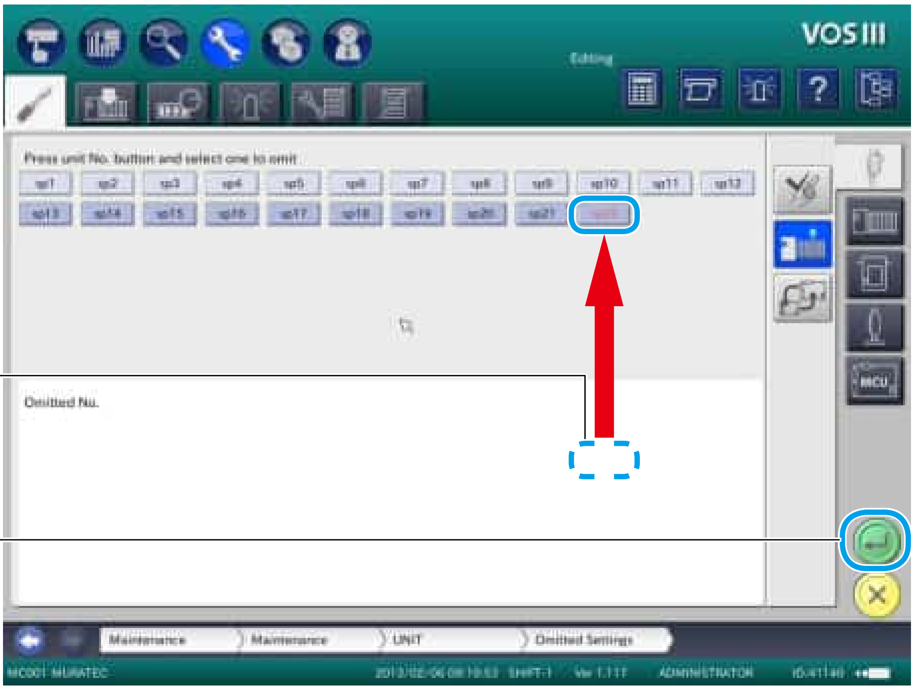
Press unit No. button and select one to omit

1. **Touch the unit No. you want to set for omission.**

   Unit No. selected for omission.

2. **Touch “Confirm.”**

Cancel Omit Winding Unit


VOS III
Editing
sp1
sp2
sp3
sp4
sp5
sp6
sp7
sp8
sp9
sp10
sp11
sp12
sp13
sp14
sp15
sp16
sp17
sp18
sp19
sp20
sp21
Omitted No.
Maintenance
Maintenance
UNIT
Omitted Settings
MC001 MURATEC
ADMINISTRATOR

Press unit No. button and select one to omit

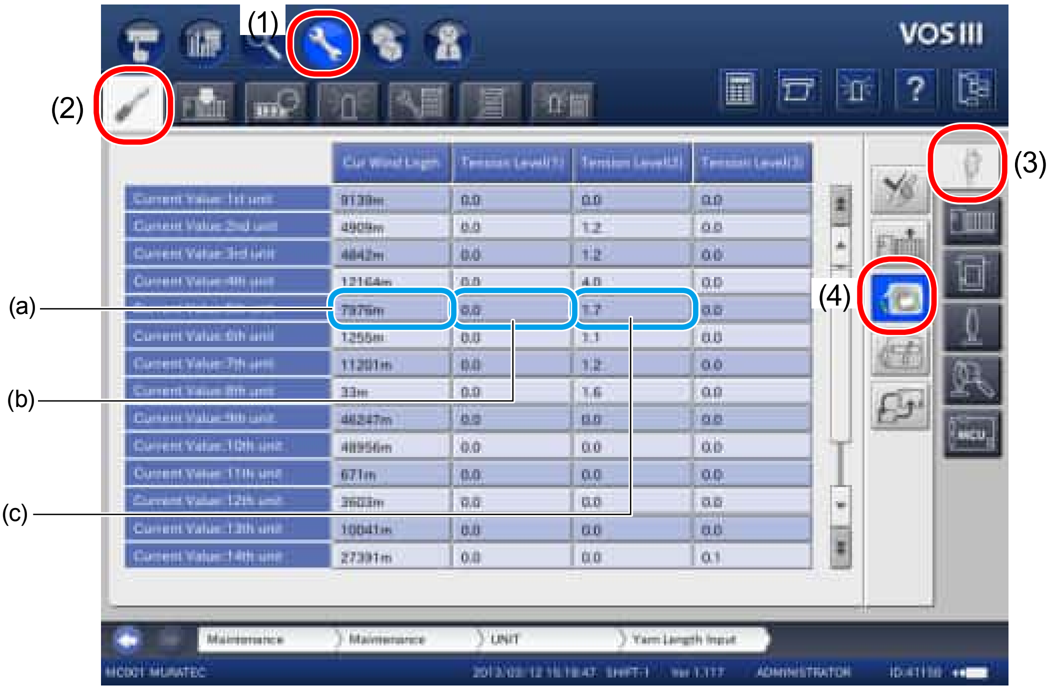
1. **Touch the Unit No. set for omission.**

2. **Touch “Confirm.”**

<41150> Fixed Yarn Length Individual Input

The current winding length and tension values can be overwritten. These values are saved in the memory on the unit's SPC. Use this method when the fixed yarn length is accidentally reset. This is not used as a normal operation.

* When replacing the unit SPC, use the unit SPC replacement function. For details, refer to Chapter 7 "<41170> Unit SPC Replacement".



	Cur Wind Lngth	Tension Level(1)	Tension Level(2)	Tension Level(3)
Current Value:1st unit	9139m	0.0	0.0	0.0
Current Value:2nd unit	4909m	0.0	1.2	0.0
Current Value:3rd unit	4842m	0.0	1.2	0.0
Current Value:4th unit	12164m	0.0	4.0	0.0
[illegible]	7976m	0.0	1.7	0.0
Current Value:6th unit	1255m	0.0	1.1	0.0
Current Value:7th unit	11201m	0.0	1.2	0.0
Current Value:8th unit	33m	0.0	1.6	0.0
Current Value:9th unit	46247m	0.0	0.0	0.0
Current Value:10th unit	48956m	0.0	0.0	0.0
Current Value:11th unit	671m	0.0	0.0	0.0
Current Value:12th unit	3603m	0.0	0.0	0.0
Current Value:13th unit	10041m	0.0	0.0	0.0
Current Value:14th unit	27391m	0.0	0.0	0.1

(a) Winding yarn length input	The yarn length is inputted for the corresponding winding unit.
(b) Tension voltage (1) input	The tension voltage (1) is inputted for the corresponding winding unit.
(c) Tension voltage (2) input	The tension voltage (2) is inputted for the corresponding winding unit.

* Save the current values first, before inputting the new winding yarn length. To save the current values beforehand, it is helpful to use the current length report in the data output.

<41170> Unit SPC Replacement

When replacing the unit SPC, the fixed yarn length and all correction data before the replacement can be automatically copied. Always follow the procedure on the screen when replacing the SPC.

<41220> Main SPC Replacement

When replacing the main SPC, all data before the replacement can be automatically copied.
Always follow the procedure on the screen when replacing the SPC.

<41320> AD SPC Replacement

When replacing the AD SPC, all data before the replacement can be automatically copied.
Always follow the procedure on the screen when replacing the SPC.

<41420> CBF SPC Replacement

When replacing the CBF SPC, all data before the replacement can be automatically copied.
Always follow the procedure on the screen when replacing the SPC.

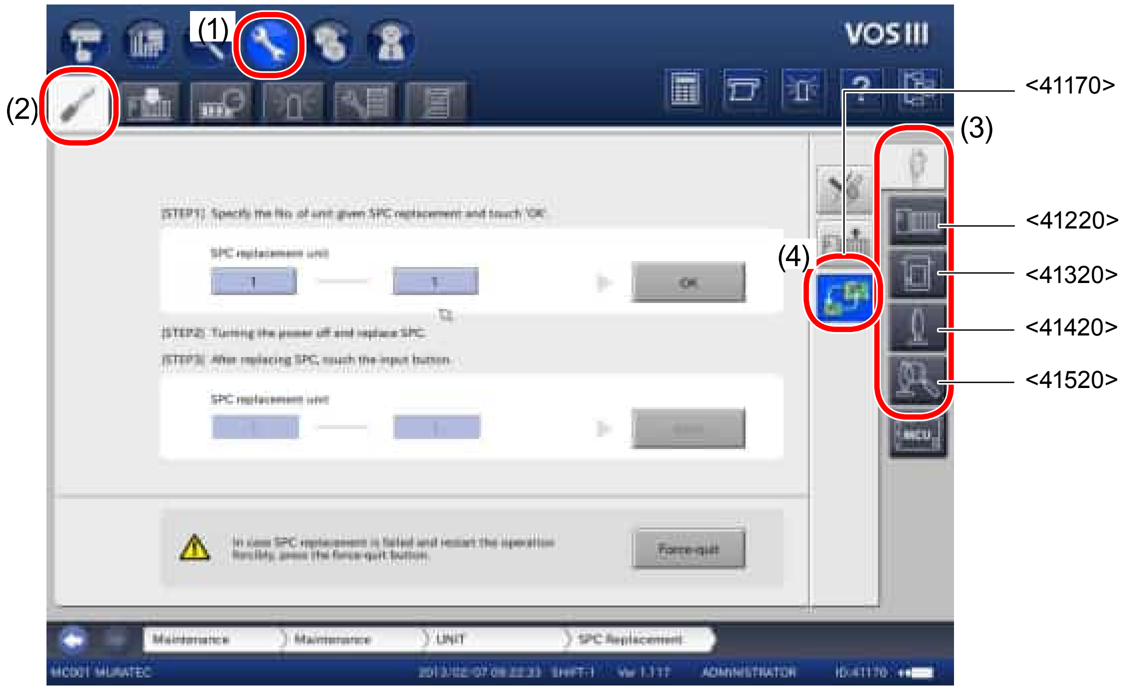
<41520> Inspector SPC Replacement

When replacing the inspector SPC, all data before the replacement can be automatically copied.
Always follow the procedure on the screen when replacing the SPC.

* This screen displays when using a spin inspector Type-A specification.

SPC Replacement

1. **After touching (1), (2) and then (3) in order, touch and select one of the icons from (4).**
2. **Follow the procedure on the screen to operate.**



[STEP1] Specify the No. of unit given SPC replacement and touch 'OK'

SPC replacement unit: 1 — 1

[STEP2] Turning the power off and replace SPC

[STEP3] After replacing SPC, touch the input button

SPC replacement unit

In case SPC replacement is failed and restart the operation forcibly, press the force-quit button.

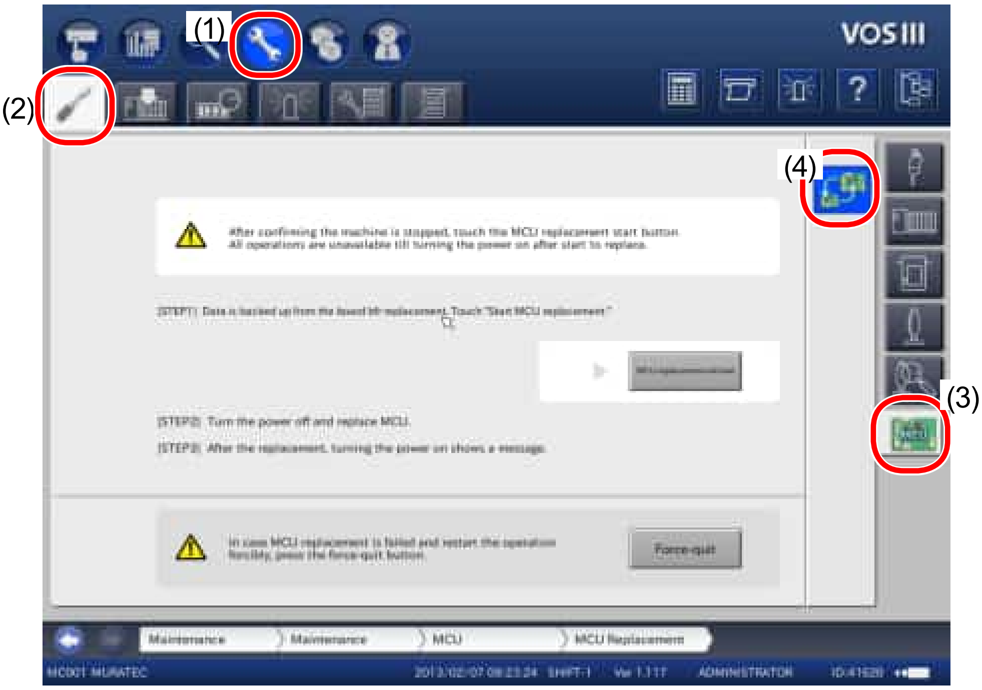
(1)
(2)
(3)
(4)
VOS III
OK
Force-quit
Maintenance
Maintenance
UNIT
SPC Replacement
MC001 MURATEC
2013/02/07 08:22:33 SHIFT-1 Ver 1.11T ADMINISTRATOR ID:41170
<41170>
<41220>
<41320>
<41420>
<41520>

<41620> MCU Replacement

When replacing the MCU, all data before the replacement can be automatically copied.
Always follow the procedure on the screen when replacing the MCU.

MCU Replacement

1. **After touching (1), (2) and then (3) in order, touch and select one of the icons from (4).**
2. **Follow the procedure on the screen to operate.**


(1)
(2)
(3)
(4)
VOS III
?

After confirming the machine is stopped, touch the MCU replacement start button.
All operations are unavailable till turning the power on after start to replace.

[STEP1] Data is backed up from the board for replacement. Touch "Start MCU replacement"

[STEP2] Turn the power off and replace MCU.

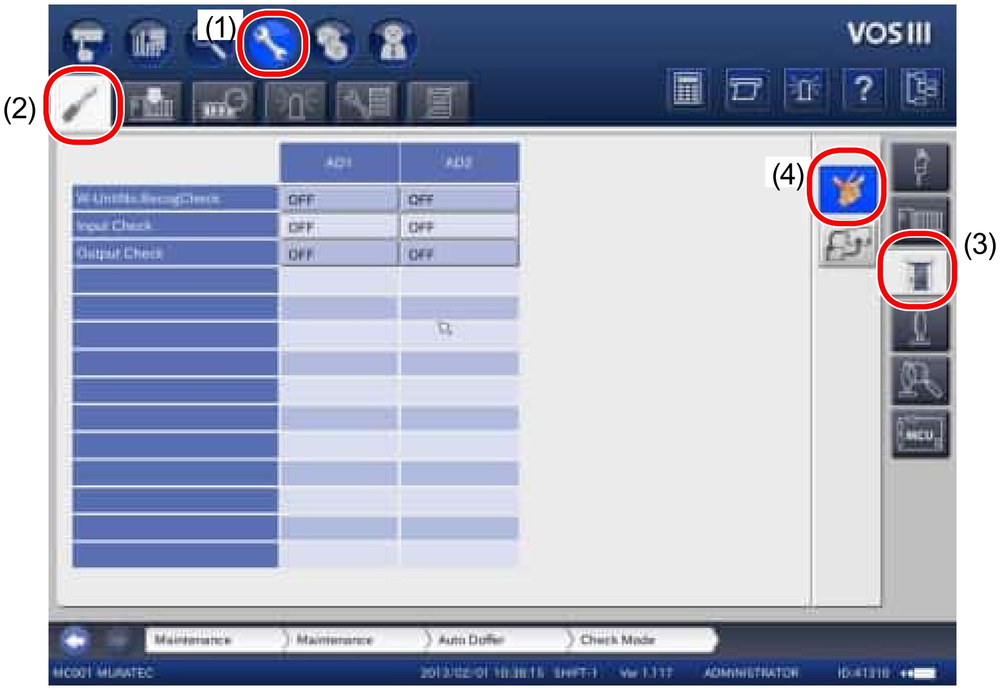
[STEP3] After the replacement, turning the power on shows a message.

In case MCU replacement is failed and restart the operation forcibly, press the force-quit button.

Force-quit
Maintenance
Maintenance
MCU
MCU Replacement
MC001 MURATEC
2013/02/07 09:23:24
SHIFT-1
Ver 1.11T
ADMINISTRATOR
ID:41620

<41310> AD Check Mode

All check mode settings can be performed for the AD.


(1)
(2)
(3)
(4)
VOS III
MCU

	AD1	AD2
W-UnitBo.RecogCheck	OFF	OFF
Input Check	OFF	OFF
Output Check	OFF	OFF

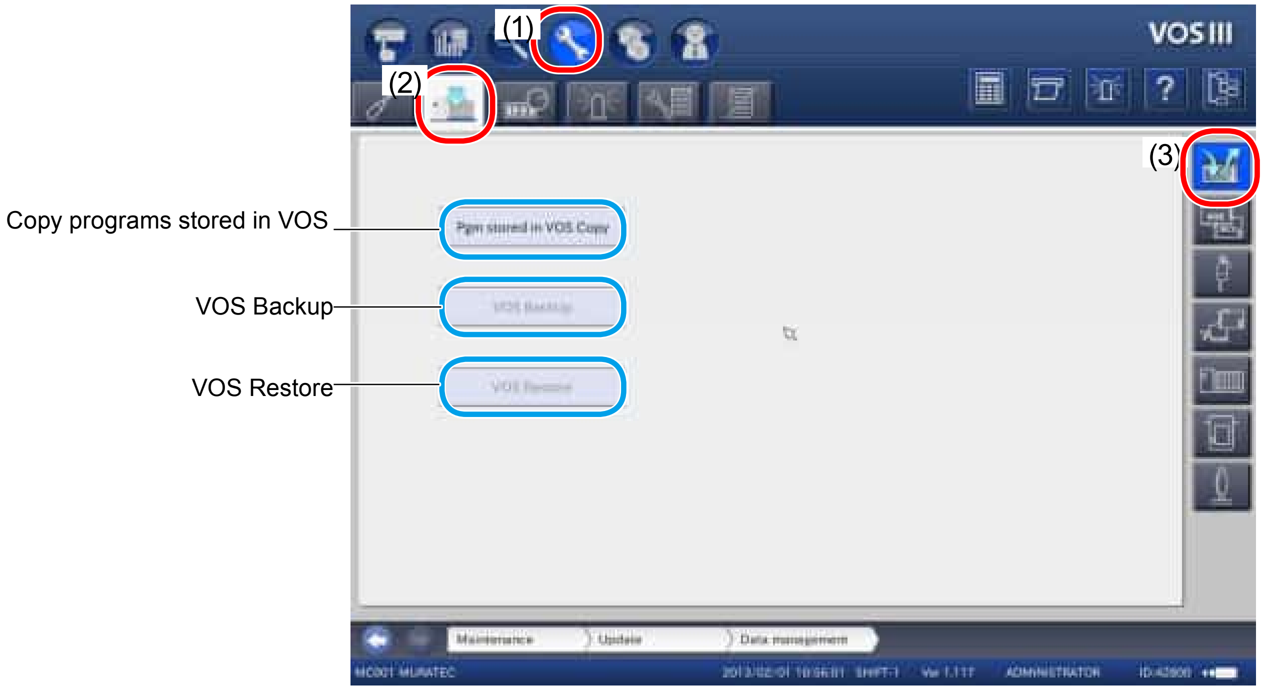
Maintenance > Maintenance > Auto Doffer > Check Mode

MC001 MURATEC 2013/02/01 10:38:15 SHIFT-1 Ver 1.117 ADMINISTRATOR ID:41310

<42800> Update > Data Management

VOS backup and recovery functions are available. In addition, programs for each device (VOS, MCU, unit, drum driver, main machine, AD, CBF, supply unit and spin inspector) can be updated.

* This screen displays when using a spin inspector Type-A specification.


(1)
(2)
(3)
VOS III
Copy programs stored in VOS
Pgm stored in VOS Copy
VOS Backup
VOS Backup
VOS Restore
VOS Restore

Maintenance > Update > Data management

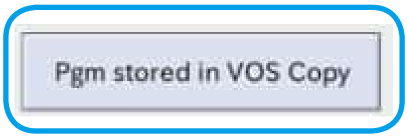
MC001 MURATEC 2013/02/01 10:56:01 SHIFT-1 Ver 1.117 ADMINISTRATOR ID:42800

Copy Programs Stored in VOS

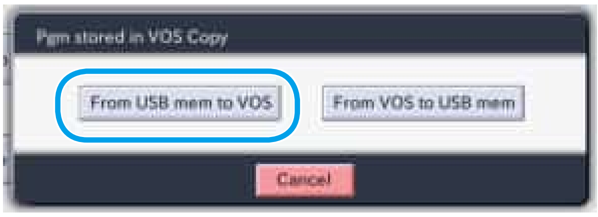
The programs for each device (VOS, MCU, unit, drum driver, main machine, AD, CBF, supply unit, and spin inspector) stored in the VOS are updated.
In addition, the programs stored in the VOS can be copied to the USB memory.

- **Update VOS stored programs**

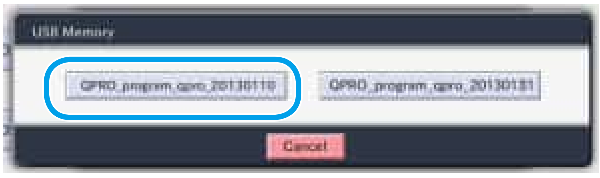
1. **Set up the USB memory and link it with the VOS**
2. **Touch “Pgm stored in VOS Copy.”**


Pgm stored in VOS Copy

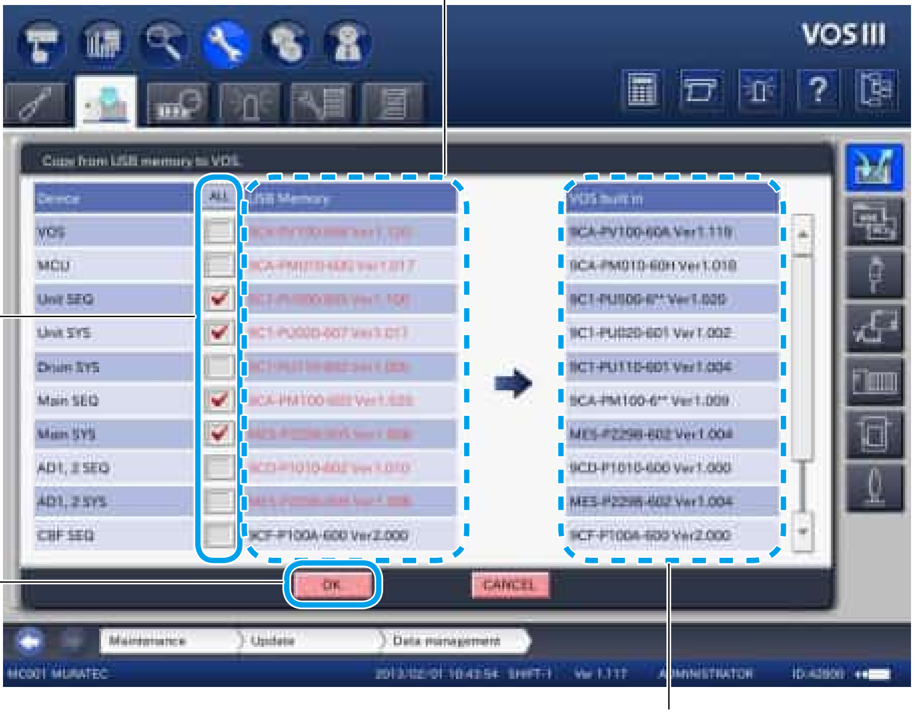
3. **Touch “From USB mem to VOS.”**


Pgm stored in VOS Copy
From USB mem to VOS
From VOS to USB mem
Cancel

4. **Select a set of VOS stored programs in the USB memory.**


USB Memory
QPRO_program_qpro_20130110
QPRO_program_qpro_20130131
Cancel

USB memory programs


VOS III
Maintenance
Update
Data management
OK
CANCEL
MC001 MURATEC
2013/02/01 10:43:54 SHIFT-1 Ver 1.117 ADMINISTRATOR ID:42800

Copy from USB memory to VOS

Device	ALL	USB Memory	VOS built in
VOS	☐	[illegible]	9CA-PV100-60A Ver1.119
MCU	☐	[illegible]	9CA-PM010-60H Ver1.018
Unit SEQ	☑	[illegible]	9C1-PU500-6** Ver1.020
Unit SYS	☑	[illegible]	9C1-PU020-601 Ver1.002
Drum SYS	☐	[illegible]	9C1-PU110-601 Ver1.004
Main SEQ	☑	[illegible]	9CA-PM100-6** Ver1.009
Main SYS	☑	[illegible]	MES-P2298-602 Ver1.004
AD1, 2 SEQ	☐	[illegible]	9CD-P1010-600 Ver1.000
AD1, 2 SYS	☐	[illegible]	MES-P2298-602 Ver1.004
CBF SEQ	☐	9CF-P100A-600 Ver2.000	9CF-P100A-600 Ver2.000

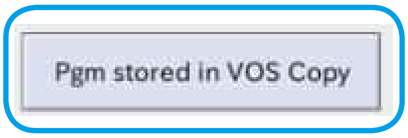
5. **Select the programs you want to update.**
6. **Touch “OK” to confirm.**
   The VOS stored programs are updated.

Current VOS stored programs

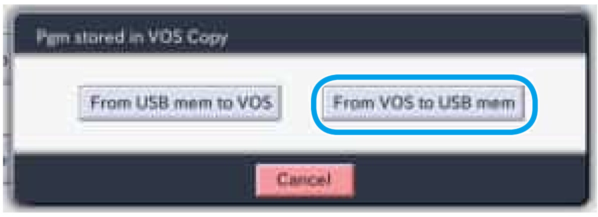
* Downloading to each device for the VOS stored programs requires a separate operation.

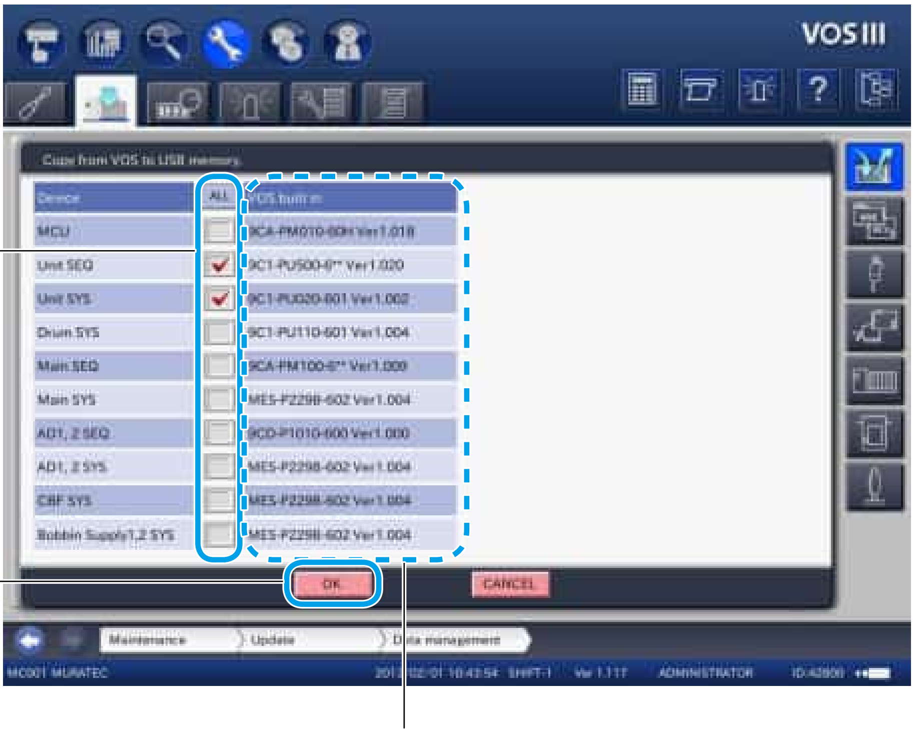
- **Removing VOS stored programs**

1. **Set up the USB memory and link it with the VOS**
2. **Touch “Pgm stored in VOS Copy.”**


Pgm stored in VOS Copy

3. **Touch “From VOS mem to USB.”**


Pgm stored in VOS Copy
From USB mem to VOS
From VOS to USB mem
Cancel


VOS III
OK
CANCEL
Maintenance
Update
Data management

Copy from VOS to USB memory

Device	ALL	VOS built in
MCU	☐	9CA-PM010-60H Ver1.018
Unit SEQ	☑	9C1-PU500-6** Ver1.020
Unit SYS	☑	9C1-PU020-601 Ver1.002
Drum SYS	☐	9C1-PU110-601 Ver1.004
Main SEQ	☐	9CA-PM100-6** Ver1.000
Main SYS	☐	MES-P2298-602 Ver1.004
AD1, 2 SEQ	☐	9CD-P1010-600 Ver1.000
AD1, 2 SYS	☐	MES-P2298-602 Ver1.004
CBF SYS	☐	MES-P2298-602 Ver1.004
Bobbin Supply1,2 SYS	☐	MES-P2298-602 Ver1.004

4. **Select the programs you want to update.**
5. **Touch “OK” to confirm.**
   Copy the programs stored in the VOS to the USB memory.

Current VOS stored programs

VOS Backup

A VOS backup file is created. All VOS data, from the point in time when the VOS backup file is created, is saved. Using a VOS recovery operation, you can restore the data to the point of time it was saved, as outlined in the next section.

* When performing a VOS version upgrade, a VOS backup file is automatically created from the data that existed before the version upgrade.

1. **Set up the USB memory and link it with the VOS.**
2. **Touch "VOS Backup."**
   The VOS backup file is created in the USB memory.

* The file created shows the VOS version and the date.

* If the USB memory has not been set up and linked with the VOS, a backup file cannot be created.

VOS Restore

The VOS is restored. The data is restored to the same point in time when the VOS backup file was created.

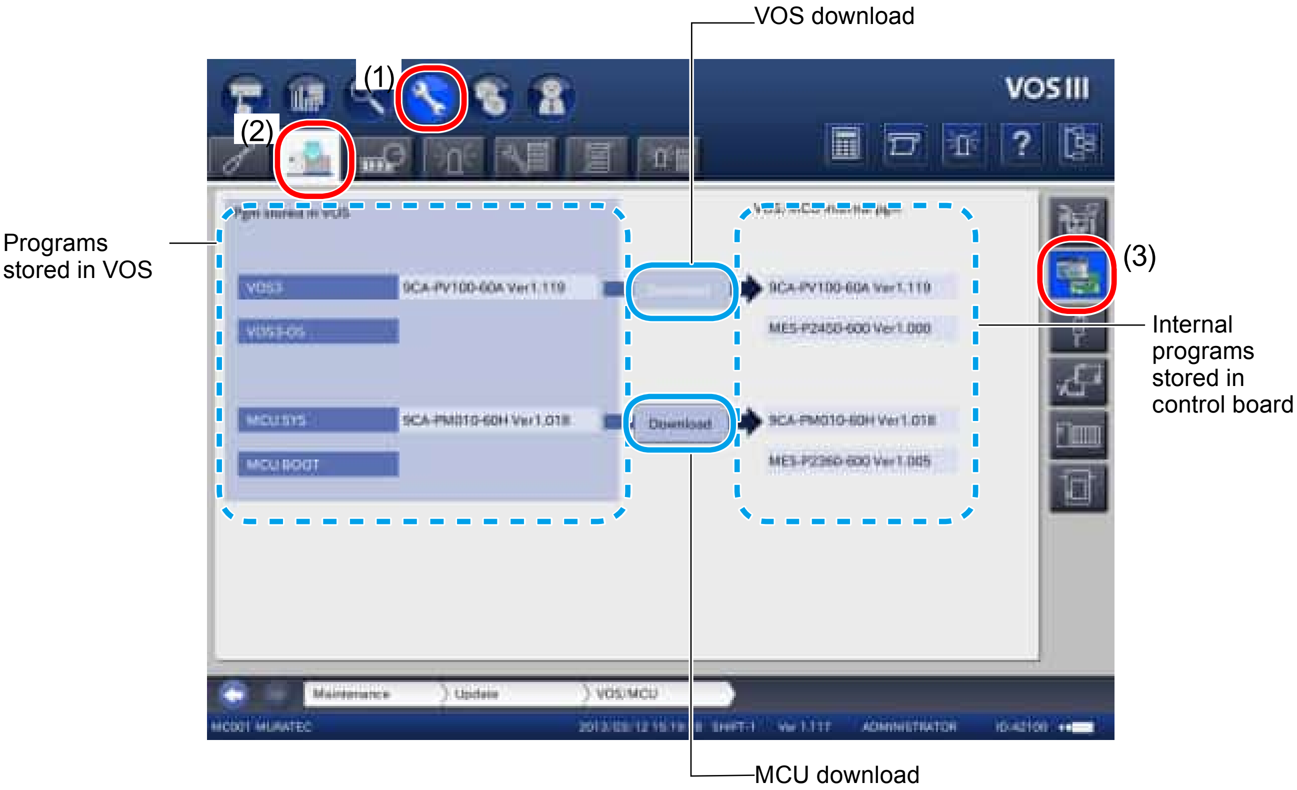
1. **Set up the USB memory and link it with the VOS.**
2. **Touch "VOS Restore."**
3. **Select the VOS backup file for the period of time you want to restore.**
   The restoring operation is automatically executed.

* If the USB memory has not been set up, it will be restored to the previous version.

<42100> Update > VOS/MCU

The VOS and MCU programs can be downloaded.

* The MCU is a communications board that mainly controls the communication network.


VOS download
(1)
(2)
VOS III
Programs stored in VOS
(3)
Internal programs stored in control board
Download
Download
Maintenance
Update
VOS/MCU
MCU download

Pgm stored in VOS

VOS3 9CA-PV100-60A Ver1.119

VOS3-OS

MCU SYS 9CA-PM010-60H Ver1.018

MCU BOOT

9CA-PV100-60A Ver1.119

MES-P2450-600 Ver1.000

9CA-PM010-60H Ver1.018

MES-P2360-600 Ver1.005

MC001 MURATEC 2013/03/12 15:19 SHIFT-1 Ver 1.117 ADMINISTRATOR ID:42100

VOS3	Product number and version of VOS3 program
VOS3-OS	Product number and version of VOS3-OS program
MCU SYS	Product number and version of MCU system program
MCU BOOT	Product number and version of MCU boot program (MCU Boot is for reading only)

Download Method

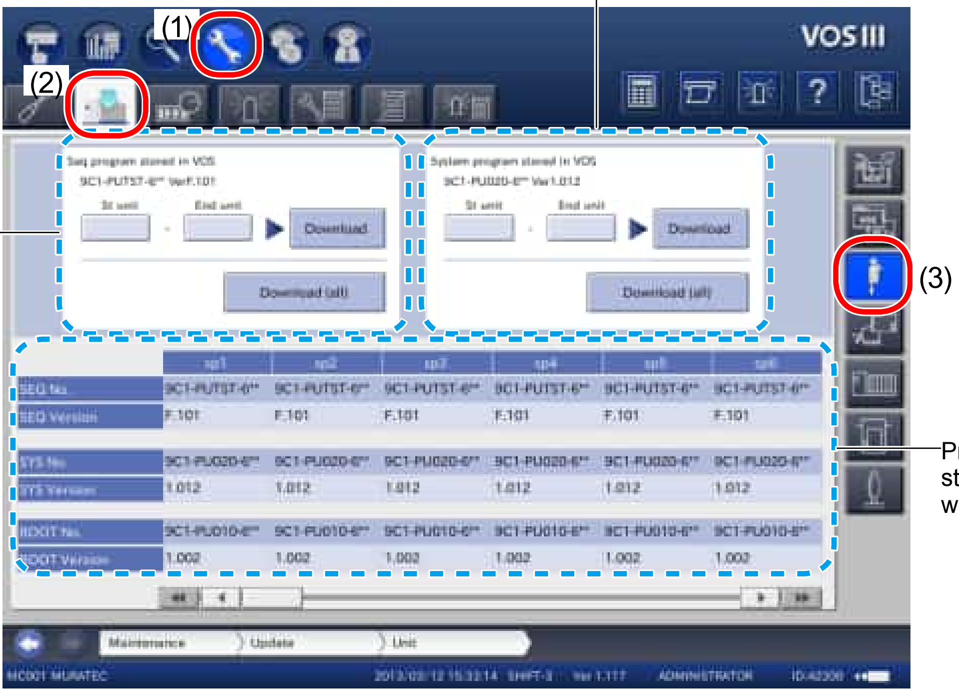
Touch “Download.”

<42300> Update > Units

The program that controls the winding unit operations can be downloaded to the winding unit.

Sequence programs stored in VOS

System programs stored in VOS


(1)
(2)
(3)
VOS III
Seq program stored in VOS
St unit
End unit
Download
Download (all)
System program stored in VOS
St unit
End unit
Download
Download (all)
Maintenance
Update
Unit
MC001 MURATEC
2013/03/12 15:33:14
SHIFT-3
Ver 1.111
ADMINISTRATOR

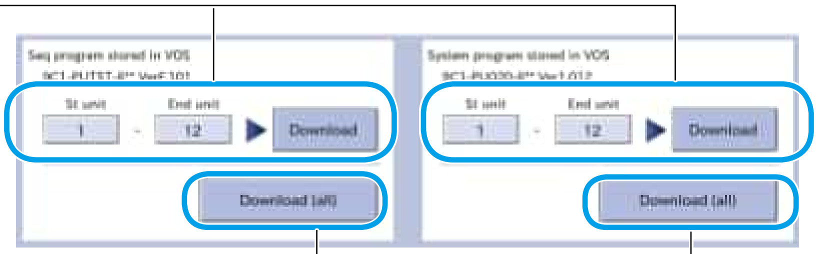
	sp1	sp2	sp3	sp4	sp5	sp6
SEQ No.	9C1-PUTST-6**	9C1-PUTST-6**	9C1-PUTST-6**	9C1-PUTST-6**	9C1-PUTST-6**	9C1-PUTST-6**
SEQ Version	F.101	F.101	F.101	F.101	F.101	F.101
SYS No.	9C1-PU020-6**	9C1-PU020-6**	9C1-PU020-6**	9C1-PU020-6**	9C1-PU020-6**	9C1-PU020-6**
SYS Version	1.012	1.012	1.012	1.012	1.012	1.012
BOOT No.	9C1-PU010-6**	9C1-PU010-6**	9C1-PU010-6**	9C1-PU010-6**	9C1-PU010-6**	9C1-PU010-6**
BOOT Version	1.002	1.002	1.002	1.002	1.002	1.002

Programs stored in the winding unit

Sequence Program (SEQ) and System Program (SYS) Download

- **Specify the winding unit and touch “Download.”**

  * Inputting the “End unit” is not required when only downloading one winding unit.

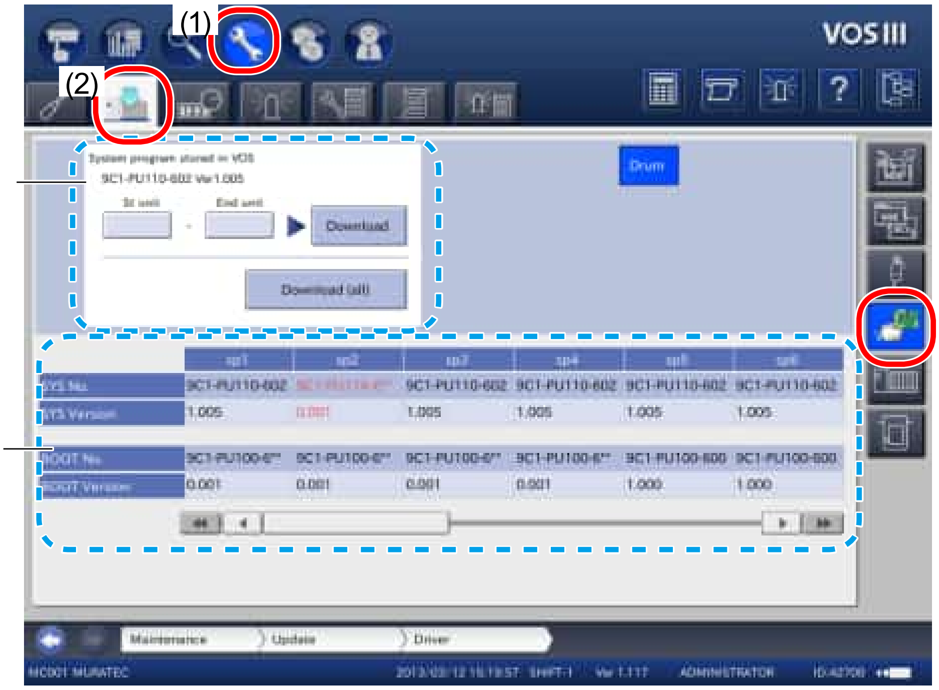

Seq program stored in VOS
St unit
End unit
1
12
Download
Download (all)
System program stored in VOS
St unit
End unit
1
12
Download
Download (all)

- **If all winding units apply, touch “Download (all).”**

* When downloading the system program, after downloading it, the sequence program will also automatically download.

<42700> Update > Driver

This screen downloads the internal drum driver program to the winding unit.


(1)
(2)
(3)
VOS III
Drum
Maintenance
Update
Driver

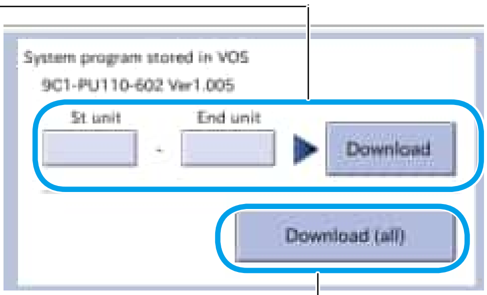
Programs stored in VOS

Programs stored in the winding unit

System Program (SYS) Download

- **Specify the winding unit and touch “Download.”**

  * Inputting the “End unit” is not required when only downloading one winding unit.



System program stored in VOS

9C1-PU110-602 Ver1.005

St unit
End unit
Download
Download (all)

- **If all winding units apply, touch “Download (all).”**

<42200> Update > Main Machine

The program that controls the operations for the main machine can be downloaded to the main machine.

<42400> Update > AD

The program that controls the AD operations can be downloaded to the AD.

<42510> Update > CBF

The program that controls the CBF operations can be downloaded to the CBF.

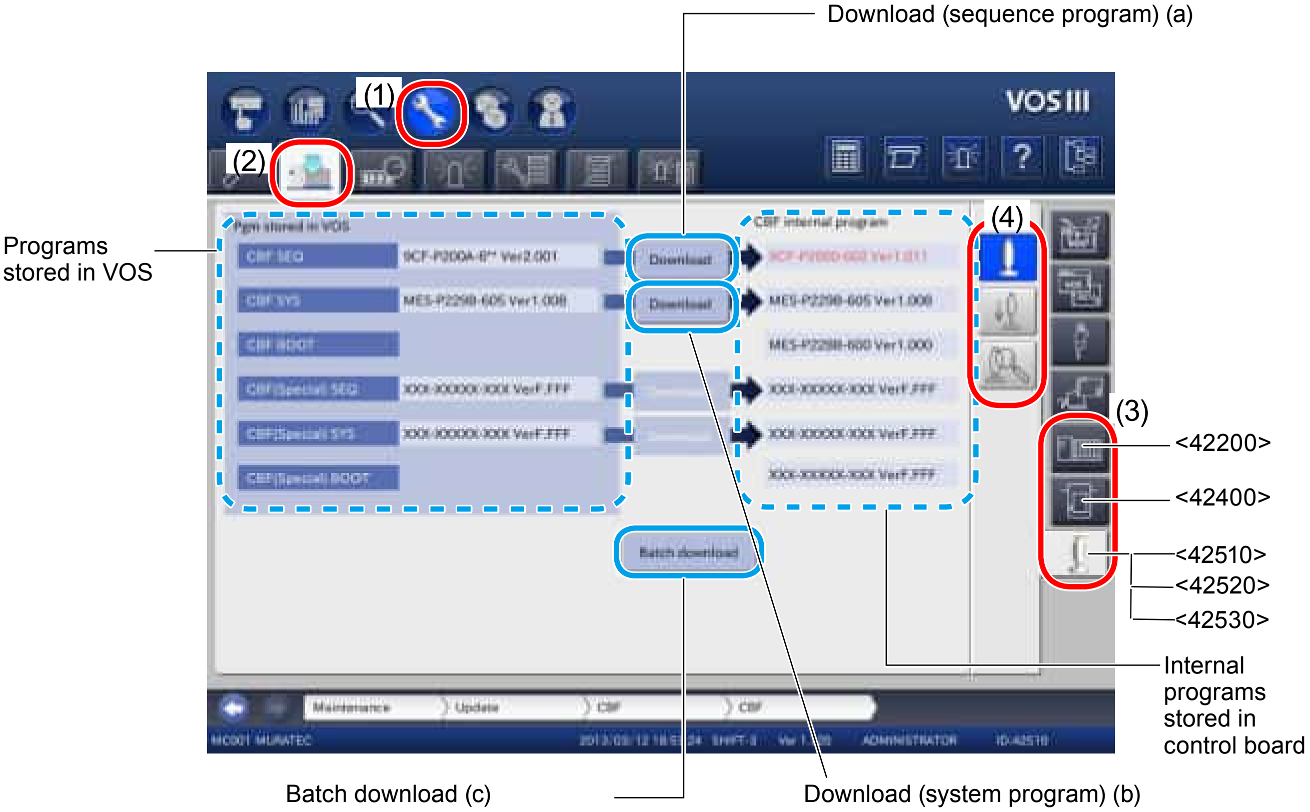
<42520> Update > Supply Units

The program that controls the supply unit operations can be downloaded to the supply unit.

<42530> Update > Spin Inspector

The program that controls the spin inspector operations can be downloaded to the spin inspector.

* This screen displays when using a spin inspector Type-A specification.

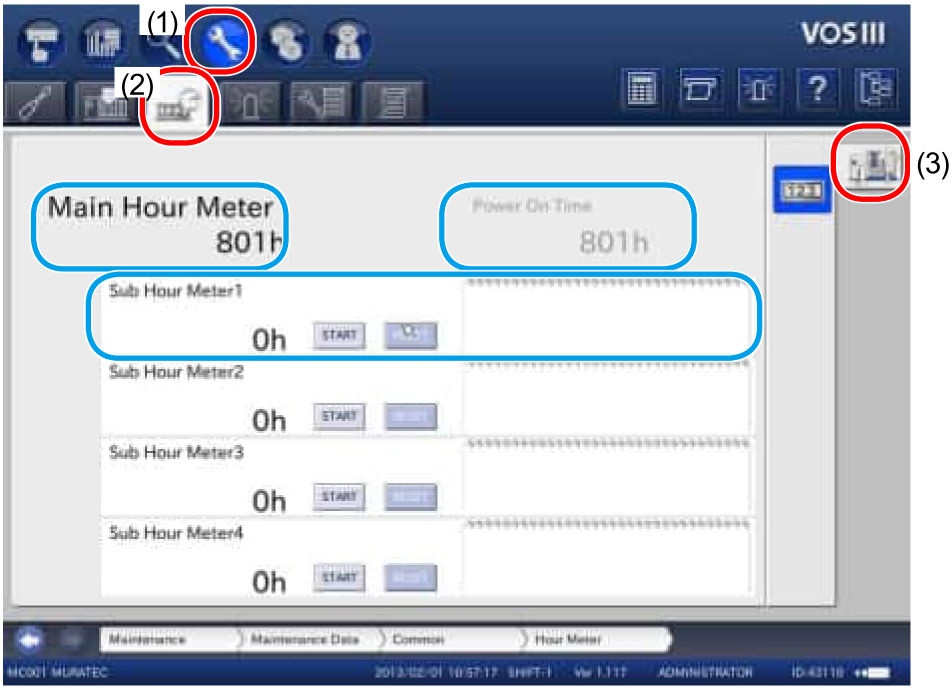

Download (sequence program) (a)
VOS III
(1)
(2)
(3)
(4)
Programs stored in VOS
Pgm stored in VOS
CBF SEQ
9CF-P200A-6** Ver2.001
CBF SYS
MES-P2298-605 Ver1.008
CBF BOOT
CBF(Special) SEQ
XXX-XXXXX-XXX VerF.FFF
CBF(Special) SYS
XXX-XXXXX-XXX VerF.FFF
CBF(Special) BOOT
Download
Download
CBF internal program
MES-P2298-605 Ver1.008
MES-P2288-600 Ver1.000
XXX-XXXXX-XXX VerF.FFF
XXX-XXXXX-XXX VerF.FFF
XXX-XXXXX-XXX VerF.FFF
Batch download
Maintenance
Update
CBF
CBF
MC001 MURATEC
ADMINISTRATOR
<42200>
<42400>
<42510>
<42520>
<42530>
Internal programs stored in control board
Batch download (c)
Download (system program) (b)

- **Sequence program (SEQ) download**
  Touch “Download” (a).
- **System program (SYS) download**
  Touch “Download” (b).

  * After downloading the system program, the sequence program will also automatically download.
- **Batch download**
  Download all programs in the screen window all at once by touching “Batch download (c).”

<43110> Hour Meter

The ON time for the machine’s power and the operation time can be monitored.
In addition, it is equipped with a Sub Hour Meter so specific timing periods can be recorded.


(1)
(2)
(3)
VOS III
Maintenance
Maintenance Data
Common
Hour Meter
MC001 MURATEC
ADMINISTRATOR

Main Hour Meter 801h

Power On Time 801h

Sub Hour Meter1 0h START RESET

Sub Hour Meter2 0h START RESET

Sub Hour Meter3 0h START RESET

Sub Hour Meter4 0h START RESET

Main Hour Meter	Displays the total operation time for the machine. The operation time cannot be reset.	
Sub Hour Meter	4 Sub Hour Meters can be used.	
	START	Starts the time recording.
	STOP	Stops the time recording.
	RESET	The time meter is cleared to zero.
	MEMO	The keyboard is opened and allows the user to input text.
Power On Time	The ON time for the power is displayed. The operation time cannot be reset.	

<44200> Unit Alarm Summary

The number of alarms that occurred on the winding unit is logged, and the log for the current shift and the previous 14 shifts is displayed.

<44100> Main Machine Alarm Summary

The number of alarms that occurred on the main machine is logged, and the log for the current shift and the previous 14 shifts is displayed.

<44300> AD Alarm Summary

The number of alarms that occurred on AD machine is logged, and the log for the current shift and the previous 14 shifts is displayed.

<44400> CBF Alarm Summary

The number of alarms that occurred on CBF is logged, and the log for the current shift and the previous 14 shifts is displayed.

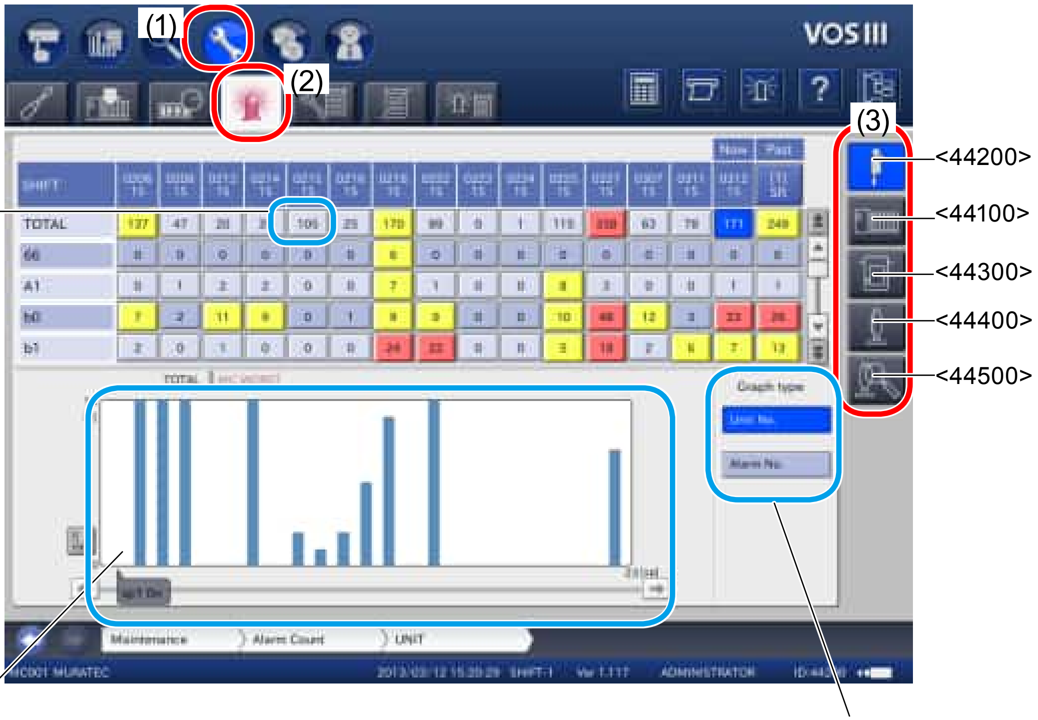
<44500> Spin Inspector Alarm Summary

The number of alarms that occurred on the spin inspector is logged, and the log for the current shift and the previous 14 shifts is displayed.

* This screen displays when using a spin inspector Type-A specification.

1. **After touching (1) and (2) in order, touch and select one of the icons from (3).**

2. **Touch the table.**


(1)
(2)
VOS III
(3)
<44200>
<44100>
<44300>
<44400>
<44500>
SHIFT
Now
Past
TOTAL
Graph type
Unit No.
Alarm No.
Maintenance
Alarm Count
UNIT
MURATEC
ADMINISTRATOR

The details are displayed in the graph.

You can switch the display either to an alarm based graph or to a unit No. based graph.

<45100> Life of the Machine Alarm Logs

The log displays all the alarms that have occurred during the life of the machine.

<45300> Unit Alarm Logs

The log displays all the alarms that have occurred in the winding units.

<45200> Main Machine Alarm Logs

The log displays all the alarms that have occurred in the main machine.

<45400> AD Alarm Logs

The log displays all the alarms that have occurred in AD.

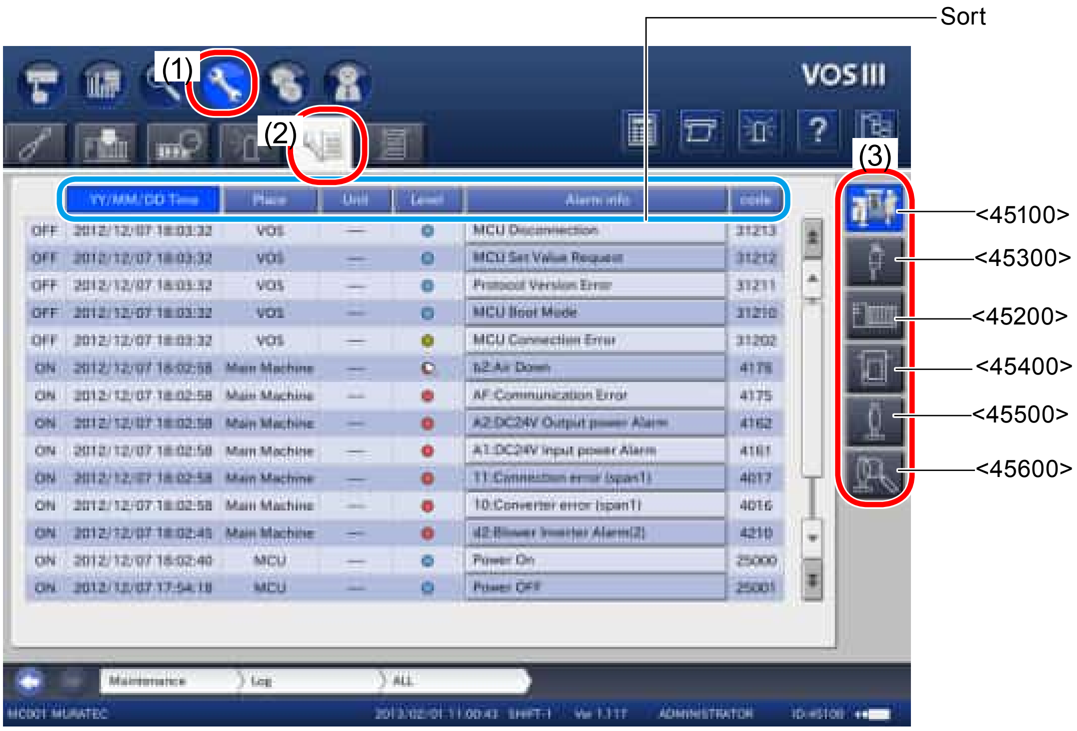
<45500> CBF Alarm Logs

The log displays all the alarms that have occurred in CBF.

<45600> Spin Inspector Alarm Logs

The log displays all the alarms that have occurred in the spin inspector.

* This screen displays when using a spin inspector Type-A specification.

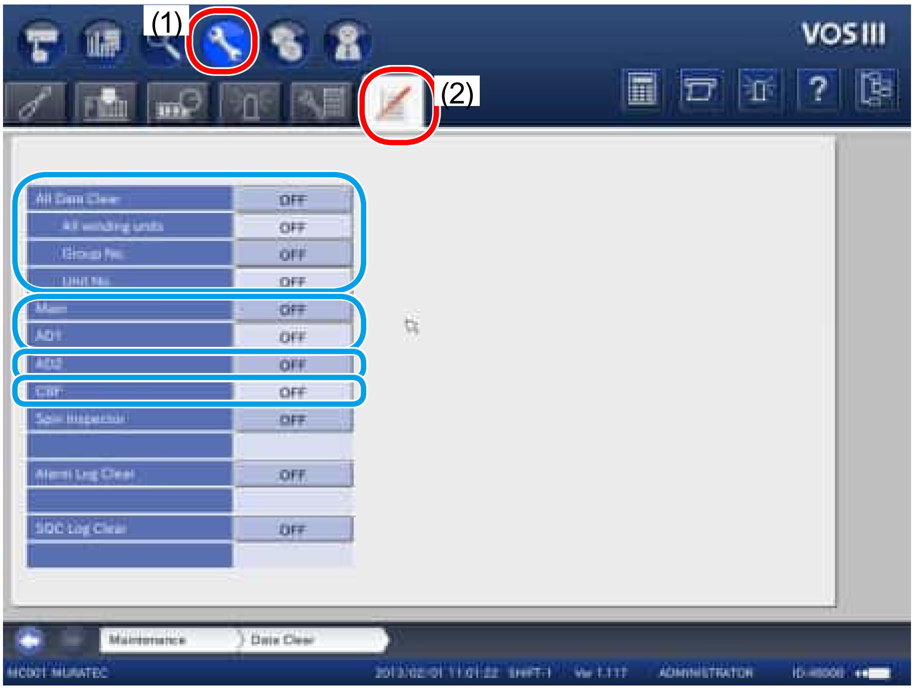


	YY/MM/DD Time	Place	Unit	Level	Alarm info	code
OFF	2012/12/07 18:03:32	VOS	—	●	MCU Disconnection	31213
OFF	2012/12/07 18:03:32	VOS	—	●	MCU Set Value Request	31212
OFF	2012/12/07 18:03:32	VOS	—	●	Protocol Version Error	31211
OFF	2012/12/07 18:03:32	VOS	—	●	MCU Boot Mode	31210
OFF	2012/12/07 18:03:32	VOS	—	●	MCU Connection Error	31202
ON	2012/12/07 18:02:58	Main Machine	—	◐	62:Air Down	4176
ON	2012/12/07 18:02:58	Main Machine	—	●	AF:Communication Error	4175
ON	2012/12/07 18:02:58	Main Machine	—	●	A2:DC24V Output power Alarm	4162
ON	2012/12/07 18:02:58	Main Machine	—	●	A1:DC24V Input power Alarm	4161
ON	2012/12/07 18:02:58	Main Machine	—	●	11:Connection error (span1)	4017
ON	2012/12/07 18:02:58	Main Machine	—	●	10:Converter error (span1)	4016
ON	2012/12/07 18:02:45	Main Machine	—	●	42:Blower Inverter Alarm(2)	4210
ON	2012/12/07 18:02:40	MCU	—	●	Power On	25000
ON	2012/12/07 17:54:18	MCU	—	●	Power OFF	25001

* Use the sort button to change the display order according to the date/time, place (of alarm), alarm level, alarm information or code.

<48000> Data Clear

The operation and quality data, etc., for the machine can be cleared.


(1)
(2)
VOS III
Maintenance
Data Clear
MC001 MURATEC
ADMINISTRATOR
ID-48000

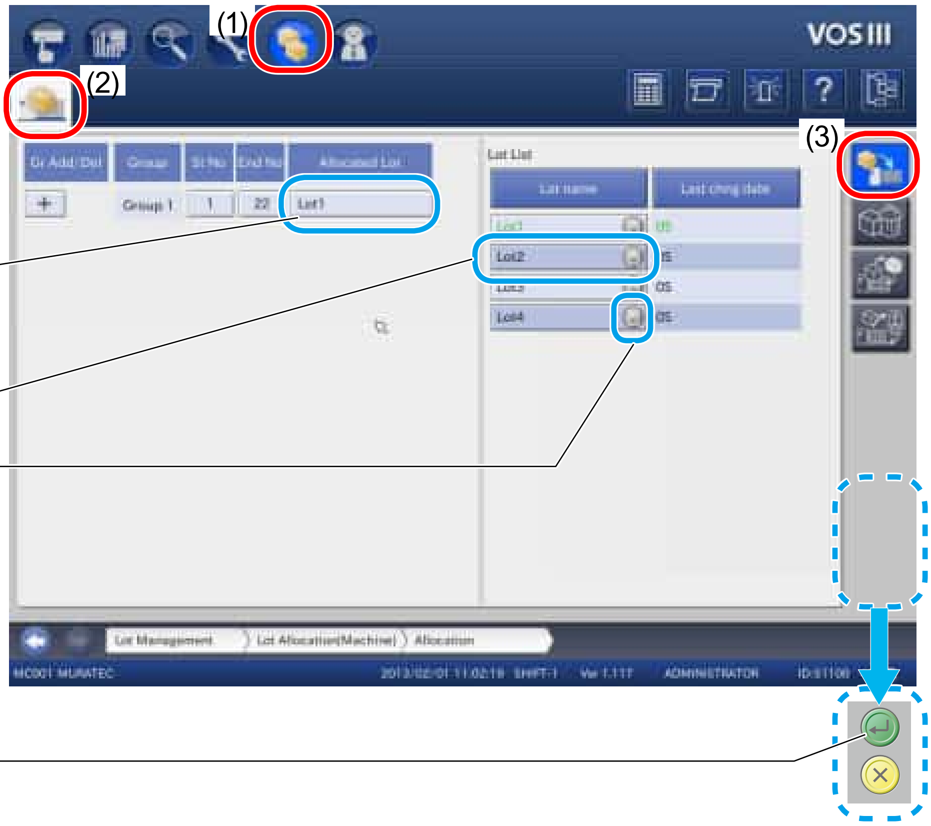
All Data Clear	OFF
All winding units	OFF
Group No.	OFF
Unit No.	OFF
Main	OFF
AD1	OFF
AD2	OFF
CBF	OFF
Spin Inspector	OFF
Alarm Log Clear	OFF
SQC Log Clear	OFF

All Data Clear	Clear all device data.
All Winding Units	Clear data for all winding units.
Group No.	Clear unit data in each group.
Unit No.	Clear unit data for each spindle.
AD1, AD2	Clear the data for AD1 and AD2.
CBF	Clear the CBF data.
Spin Inspector	Clear data for the spin inspector. * This screen displays when using a spin inspector Type-A specification.

Sec 7 Lot Management

The lot can be both changed and deleted from the memory.
Both operations are accessed from “Lot Management” in the main menu.

<51100> Lot Allocation


(1)
(2)
(3)
VOS III
Gr Add/Del
Group
St No
End No
Allocated Lot
Group 1
1
22
Lot1
Lot List
Lot name
Last chng date
Lot1
Lot2
Lot3
Lot4
Lot Management
Lot Allocation(Machine)
Allocation
MC001 MURATEC
2013/02/01 11:02:19
SHIFT-1
Ver 1.11T
ADMINISTRATOR
ID:51100

1. **Touch (1), (2) and then (3).**
2. **Select the lot you want to change.**
3. **Touch the lot name you want to allocate.**
   * You can refer to an overview of simple lot settings by touching the “Memo” icon to the right of the saved lot.
4. **Touch “Confirm.”**

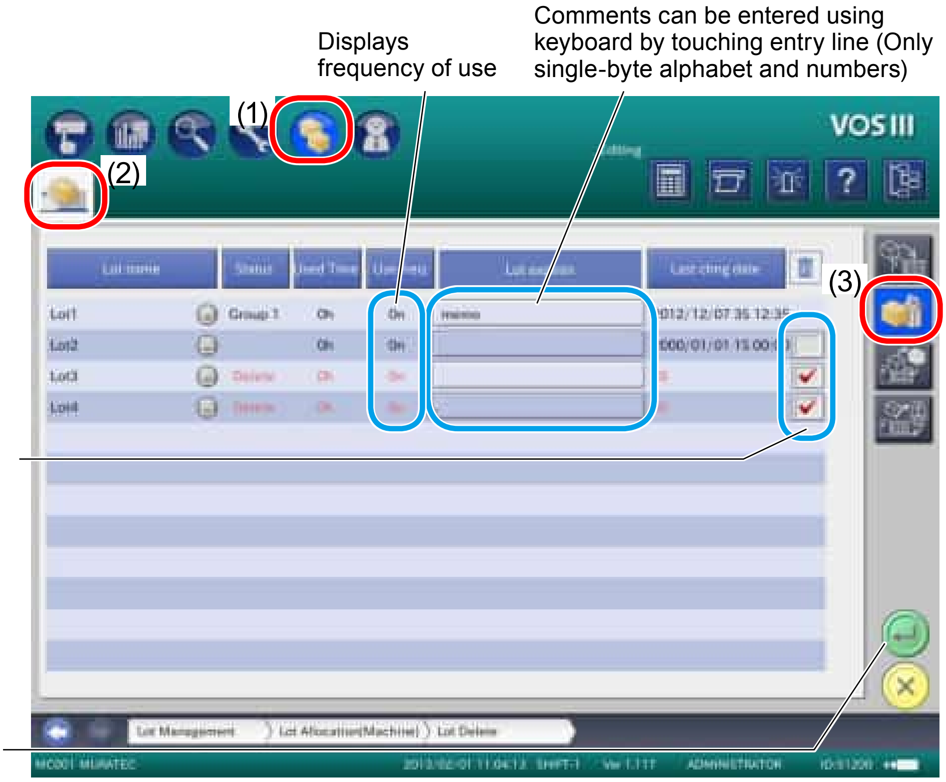
* After performing the setting operation, the shift change selection screen is displayed. Select and touch “Yes,” or “No.”

- **Number of registered lots**

Maximum lots: 200
However, a portion of these is used for Murata service technicians.

<51200> Lot Deletion

When checking the usage frequency for each lot, the time used and the date when the lot was allocated, you can also delete unnecessary lots and organize the data.
You can also write and save a comment or memo for a given lot with a lot explanation.


Displays frequency of use
Comments can be entered using keyboard by touching entry line (Only single-byte alphabet and numbers)
(1)
(2)
(3)
VOS III

1. **Touch (1), (2) and then (3).**

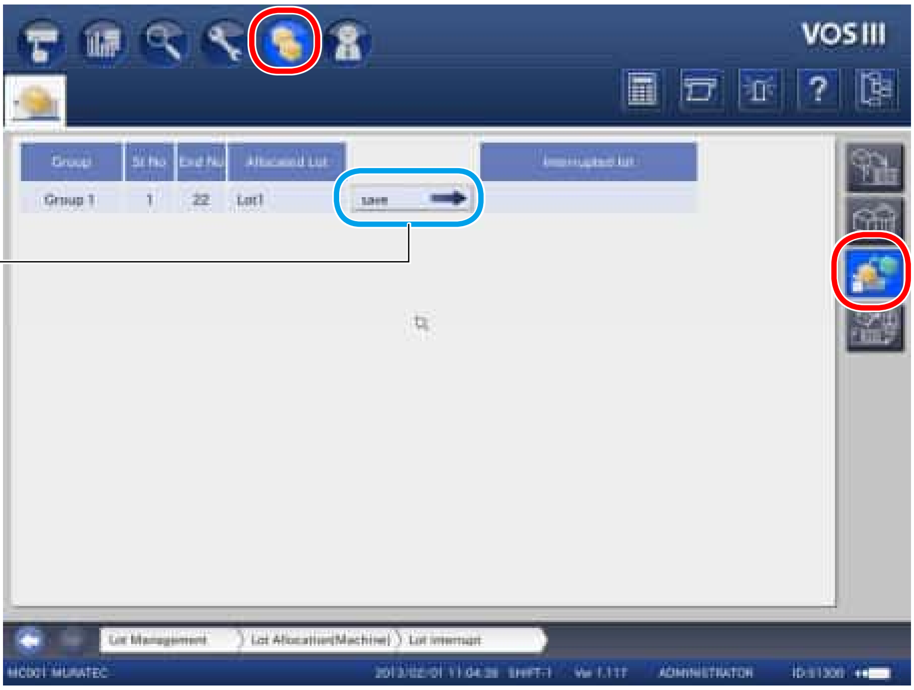
2. **Touch the check box of the lot that you want to delete.**
   Multiple lots can be selected.

   * Lots that have been allocated cannot be deleted.

3. **Touch “Confirm.”**

<51300> Lot Interruption

A current lot can be replaced with another lot while in use. The interrupted lot can be restored when the operation of the other lot is completed by restoring.


VOS III
Group
St No
End No
Allocated Lot
Interrupted lot
Group 1
1
22
Lot1
save
Lot Management
Lot Allocation(Machine)
Lot interrupt
MC001 MURATEC
ADMINISTRATOR
ID:51300

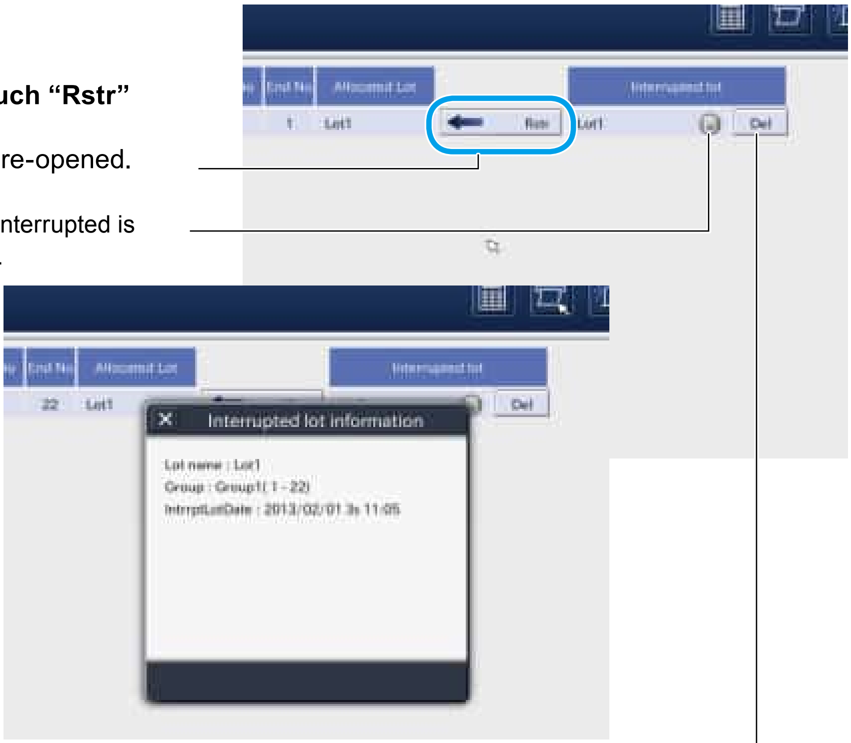
1. **Touch “save” for the lot that you want to interrupt.**

   The lot is saved.

2. **Allocate another lot. (Refer to Chapter 7 “<51100> Lot Allocation” for the allocation method.)**

3. **To re-open an interrupted lot, touch “Rstr” (restore) for the interrupted lot.**
   The interrupted lot is allocated and re-opened.

   * Information such as the date and time interrupted is displayed by touching the “memo” icon.


End No
Allocated Lot
Interrupted lot
1
Lot1
Rstr
Lot1
Del
22
Lot1
Del

Interrupted lot information

Lot name : Lot1
Group : Group1(1 - 22)
IntrrptLotDate : 2013/02/01 3s 11:05

* The lot interrupted can be deleted by touching “Del” (delete).

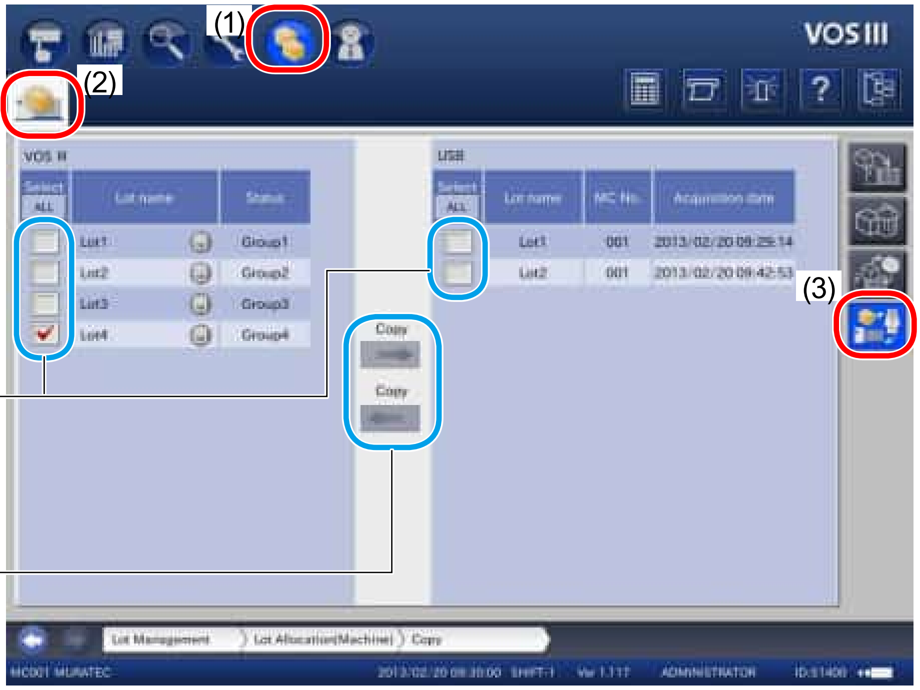
<51400> Lot Copy

Each lot can be copied between the VOS and USB.
(Backup files can be saved and copied to other machines)

1. **Touch (1), (2) and then (3).**

2. **Touch the check box of the lot that you want to copy.**
   Multiple lots can be selected.

3. **Touch one of the arrows.**


(1)
(2)
(3)
VOS III
Copy
Copy
Lot Management
Lot Allocation(Machine)
Copy
MC001 MURATEC
2013/02/20 09:30:00
SHIFT-1
Ver 1.117
ADMINISTRATOR
ID:51400

VOS III

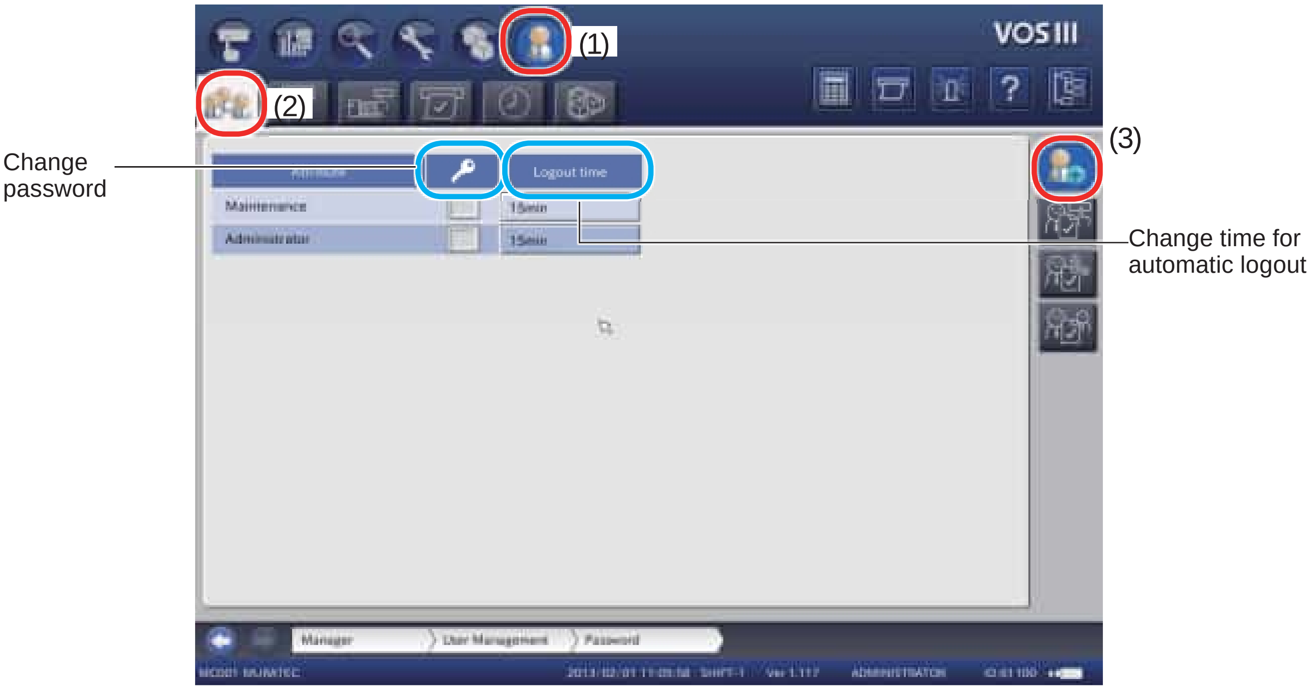
Select ALL	Lot name	Status
☐	Lot1	Group1
☐	Lot2	Group2
☐	Lot3	Group3
☑	Lot4	Group4

USB

Select ALL	Lot name	MC No.	Acquisition date
☐	Lot1	001	2013/02/20 09:29:14
☐	Lot2	001	2013/02/20 09:42:53

Sec 8 Administrator Screens

<61100> Change Password of Access Level


(1)
(2)
(3)
VOS III
Change password
Logout time
Maintenance
15min
Administrator
15min
Change time for automatic logout
Manager
User Management
Password

1. **Login as an ADMINISTRATOR.**
2. **Touch (1), (2) and then (3).**
   The screen ID <61100> is displayed.
3. **Touch corresponding "Password change".**
4. **Input the new password on the keyboard.**

   * The 1st letter for each access level is fixed.
   The 1st letter is “M” for the Maintenance access level and “A” for the Administrator access level.

   * Maximum number of characters is 16.
5. **Input the new password again to confirm.**
6. **Use minutes when inputting the automatic logout time.**

If you forgot your password

If you forgot your password (Administrator), use the following backdoor password to login. When logging in with a backdoor password, your passwords are initialized to the factory default setting. Then, set your maintenance level and administrator level passwords again.

* Backdoor password: rescue

<61210 - 61240> Access Property (Settings)

Setting of lot setting item access level can be set.

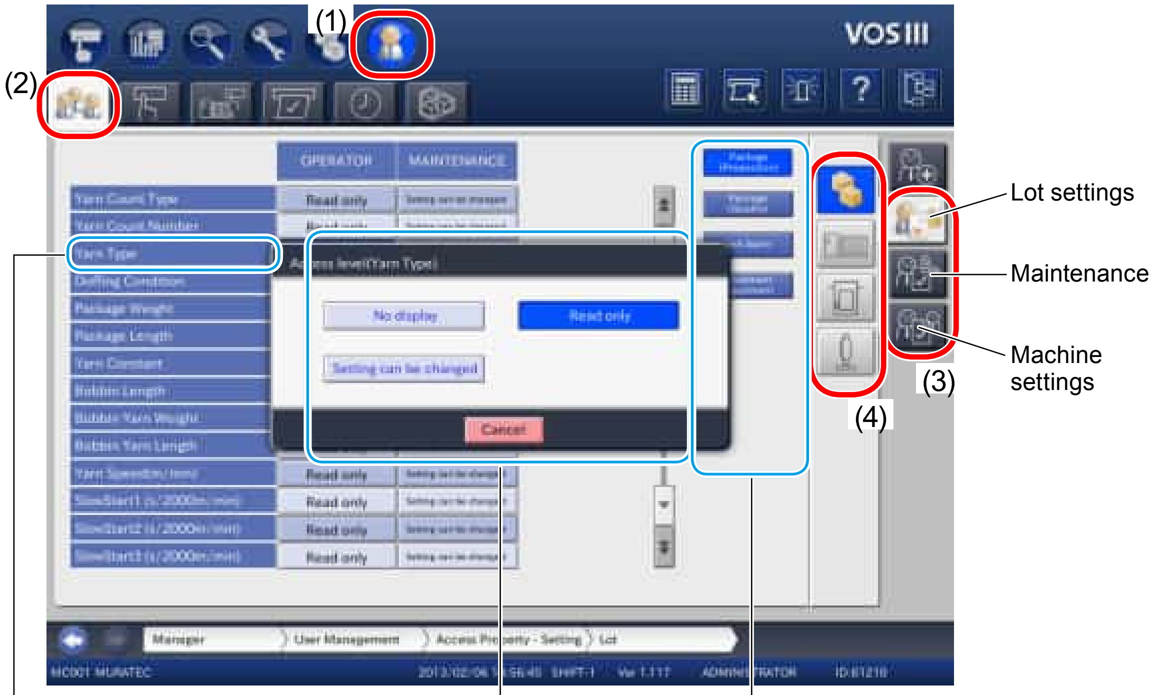
<61310> Access Property (Maintenance)

Setting of maintenance item access level can be set.

<61410 - 61420> Access Property (Manager)

Setting of machine setting item access level can be set.

1. **Login as an ADMINISTRATOR.**
2. **After touching (1) and (2) in order, touch and select one of the icons from both (3) and (4).**


(1)
(2)
VOS III
OPERATOR
MAINTENANCE
Yarn Count Type
Yarn Count Number
Yarn Type
Doffing Condition
Package Weight
Package Length
Yarn Constant
Bobbin Length
Bobbin Yarn Weight
Bobbin Yarn Length
Yarn Speed(m/min)
SlowStart1 (s/2000m/min)
SlowStart2 (s/2000m/min)
SlowStart3 (s/2000m/min)
Read only
Setting can be changed
Access level(Yarn Type)
No display
Read only
Setting can be changed
Cancel
Manager
User Management
Access Property - Setting
Lot
MC001 MURATEC
2013/02/06 15:56:40
SHIFT-1
Ver 1.11T
ADMINISTRATOR
ID 61210
Lot settings
Maintenance
Machine settings
(3)
(4)

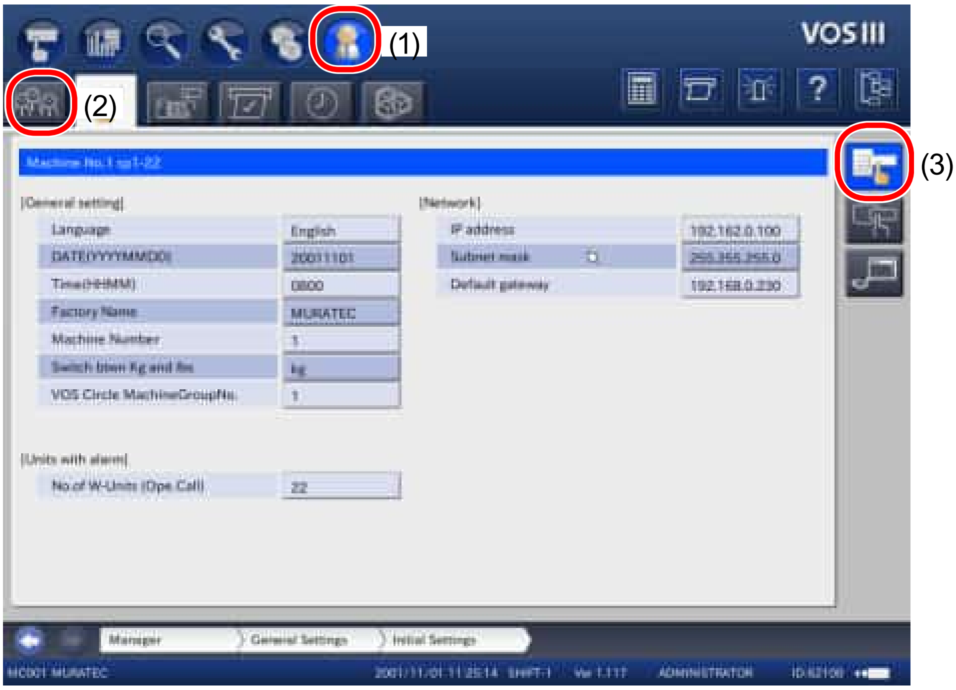
3. **Touch the item you want to change.**

Switch display items

4. **Touch the level you want to change.**

<62100> Initial Settings

The default settings can be set for general items such as for language, date and time.



Machine No.1 sp1-22

[General setting]

Language	English
DATE(YYYYMMDD)	20011101
Time(HHMM)	0800
Factory Name	MURATEC
Machine Number	1
Switch btwn Kg and lbs	kg
VOS Circle MachineGroupNo.	1

[Network]

IP address	192.162.0.100
Subnet mask	255.255.255.0
Default gateway	192.168.0.230

[Units with alarm]

No.of W-Units (Ope Call)	22

MC001 MURATEC 2001/11/01 11:25:14 SHIFT-1 Ver 1.117 ADMINISTRATOR ID:62100

- **General Setting**

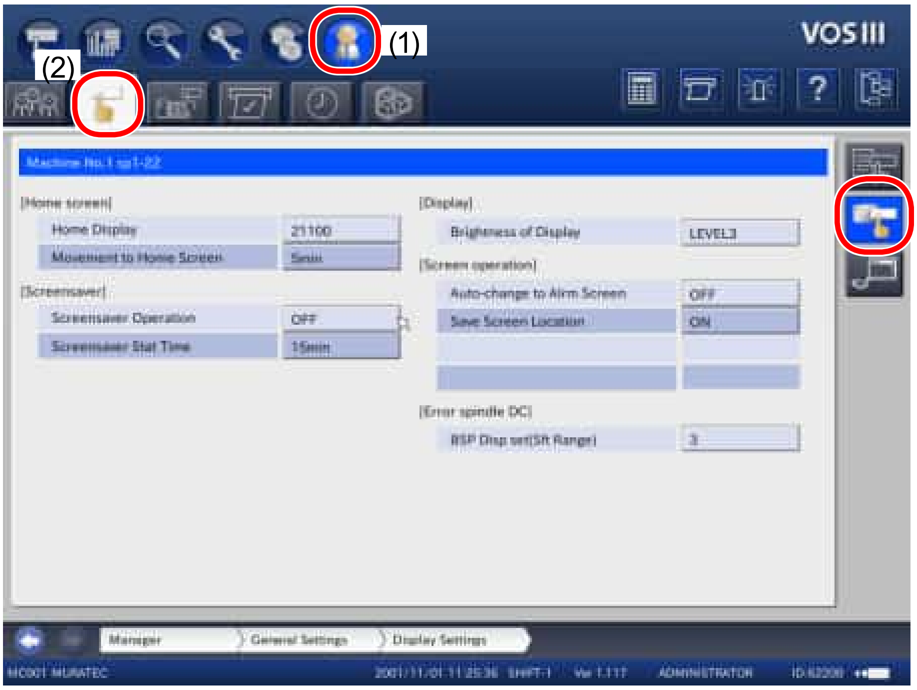
Language	Select the corresponding language from the pop-up window.
Date	Input the current date.
Time	Input the current time.
Factory Name	Input letters.
Switch btwn Kg and lbs	Select the weight unit display.

- **Network**

The network settings are for the host communications.
Use when establishing a connection to the Visual Manager and VOS Circle.

<62200> Display Settings

Settings for the VOS screen display can be performed.



Machine No.1 sp1-22

[Home screen]
Home Display: 21100
Movement to Home Screen: 5min

[Screensaver]
Screensaver Operation: OFF
Screensaver Stat Time: 15min

[Display]
Brighness of Display: LEVEL3

[Screen operation]
Auto-change to Alrm Screen: OFF
Save Screen Location: ON

[Error spindle DC]
RSP Disp set(Sft Range): 3

MC001 MURATEC 2001/11/01 11:25:36 SHIFT-1 Ver 1.11T ADMINISTRATOR ID:62200

- **Home screen**

Home Display	Use the screen ID to specify the screen that will automatically be displayed if no operation has been performed for a certain time period.
Movement to Home Screen	Input the time period when transitioning automatically to the home screen.

- **Screensaver**

Screensaver Operation	This setting activates the screensaver if there is no input on the screen for a certain time period. You can select the following operations.	
	OFF	Turns the function OFF.
	TYPE1	Shows a list of the display data.
	TYPE2	Continues to switch the order of the display data after a certain period of time.
Screensaver Start Time	Input how much time elapses before starting or activating the screensaver.	

- **Display**

Brightness of Display	The level of brightness can be adjusted using a scale from 1 to 5.		
	1	**3**	**5**
	Dark	←→	Light

- **Screen operation**

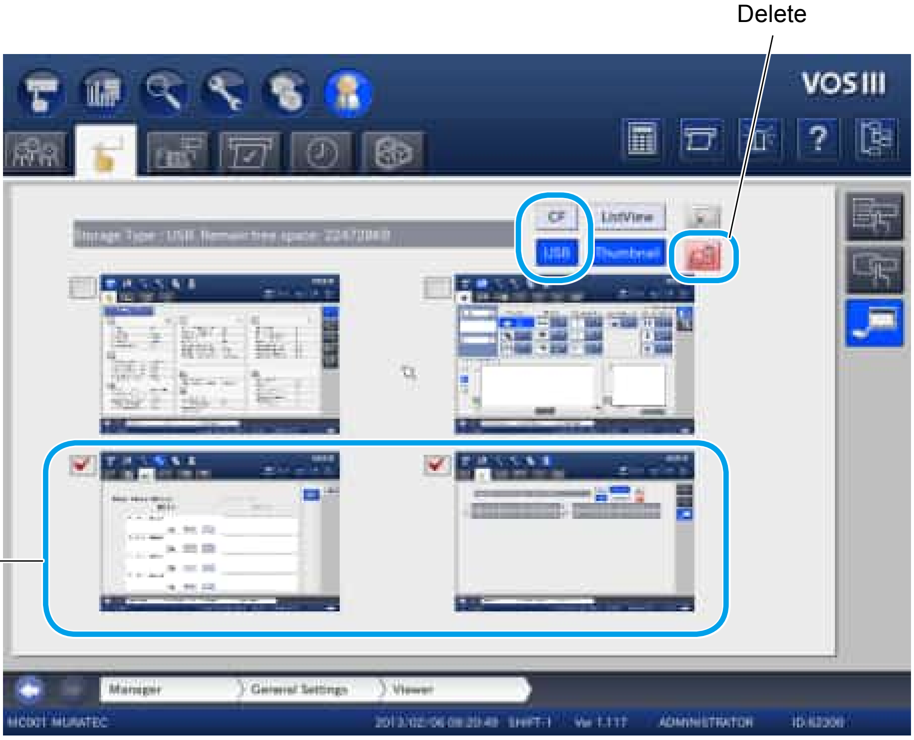
Auto-change to Alrm Screen	This setting determines whether to transition to the display screen for the alarm details when an alarm occurs.

- **Abnormal winding unit display (Error spindle DC)**

If the operation data is continuously used over the number of shifts to which the target is set, the display turns red. If the input value is not reached, the display turns yellow.

<62300> Viewer

1. **Touch “CF” to see the data in the VOS. Touch “USB” to see the data in the USB memory (When a USB memory is connected to the VOS).**
2. **Touch the screen you want to see.**

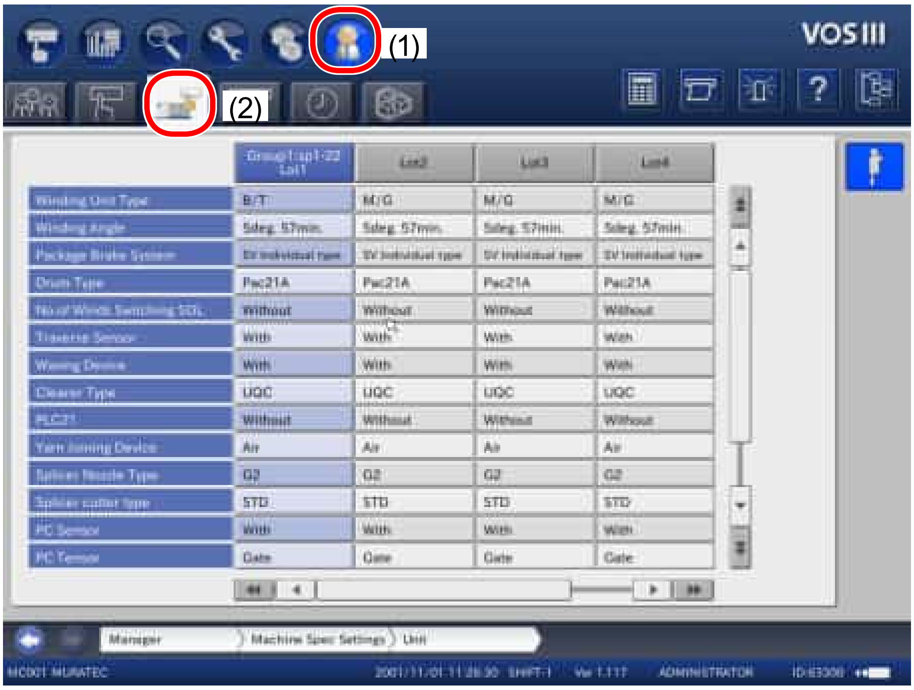

Delete
VOS III
CF
ListView
USB
Thumbnail
Manager
General Settings
Viewer
MC001 MURATEC
ADMINISTRATOR
ID:62300

- **Deleting the hard copy data**

1. **Insert a check mark for the data that you want to delete.**
2. **Touch the delete icon.**

<63300> Machine Specification Settings

The unit specification can be set.


VOS III
(1)
(2)
Manager
Machine Spec Settings
Unit
MC001 MURATEC
ADMINISTRATOR
ID:63300

	Group1:sp1-22 Lot1	Lot2	Lot3	Lot4
Winding Unit Type	B/T	M/G	M/G	M/G
Winding Angle	5deg. 57min.	5deg. 57min.	5deg. 57min.	5deg. 57min.
Package Brake System	SV individual type	SV individual type	SV individual type	SV individual type
Drum Type	Pac21A	Pac21A	Pac21A	Pac21A
No.of Winds Switching SOL	Without	Without	Without	Without
Traverse Sensor	With	With	With	With
Waxing Device	With	With	With	With
Cleaner Type	UQC	UQC	UQC	UQC
PLC21	Without	Without	Without	Without
Yarn Joining Device	Air	Air	Air	Air
Splicer Nozzle Type	G2	G2	G2	G2
Splicer cutter type	STD	STD	STD	STD
PC Sensor	With	With	With	With
PC Tensor	Gate	Gate	Gate	Gate

* You can check the explanation for each item by touching the help icon.

<64100> Report Format Settings

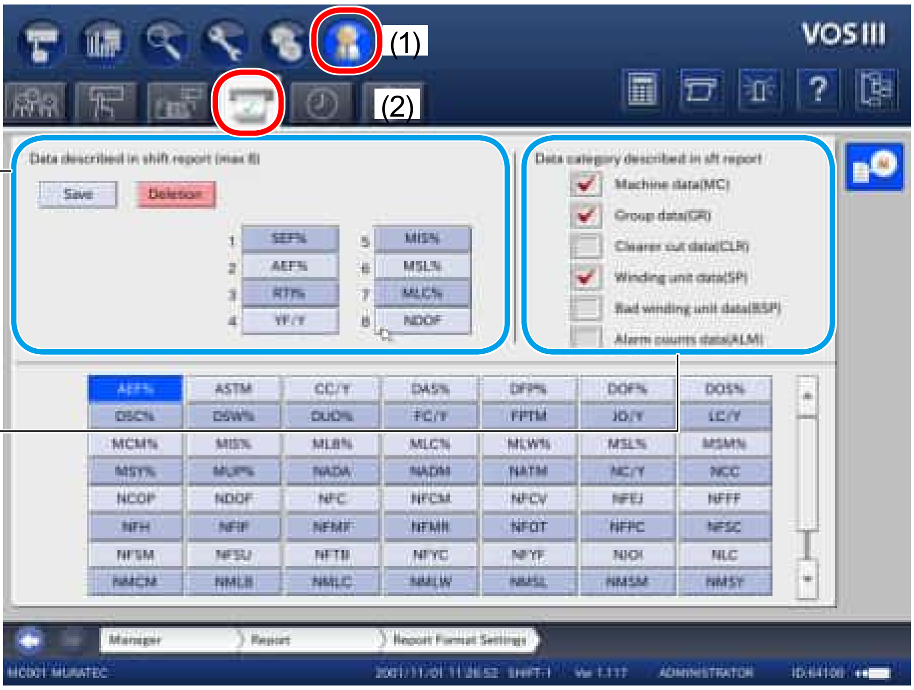
The data written in the shift report can be saved.

1. **Touch (1), (2) and then (3).**

2. **Select the data written in the shift report from the following list.**

   * The maximum number of items that can be selected is 8.

3. **Select the data category recorded in the shift report.**



VOS III
(1)
(2)
Save
Deletion
AEF% ASTM CC/Y DA5% DFP% DOF% DOS%
DSC% DSW% DUO% FC/Y FPTM JO/Y LC/Y
MCM% MIS% MLB% MLC% MLW% MSL% MSM%
MSY% MUP% NADA NADM NATM NC/Y NCC
NCOP NDOF NFC NFCM NFCV NFEJ NFFF
NFH NFIF NFMF NFMR NFOT NFPC NFSC
NFSM NFSU NFTB NFYC NFYF NIOI NLC
NMCM NMLB NMLC NMLW NMSL NMSM NMSY
Manager
Report
Report Format Settings
MC001 MURATEC
2001/11/01 11:26:52 SHIFT-1
Ver 1.11T
ADMINISTRATOR
ID:64100

Data described in shift report (max 8)

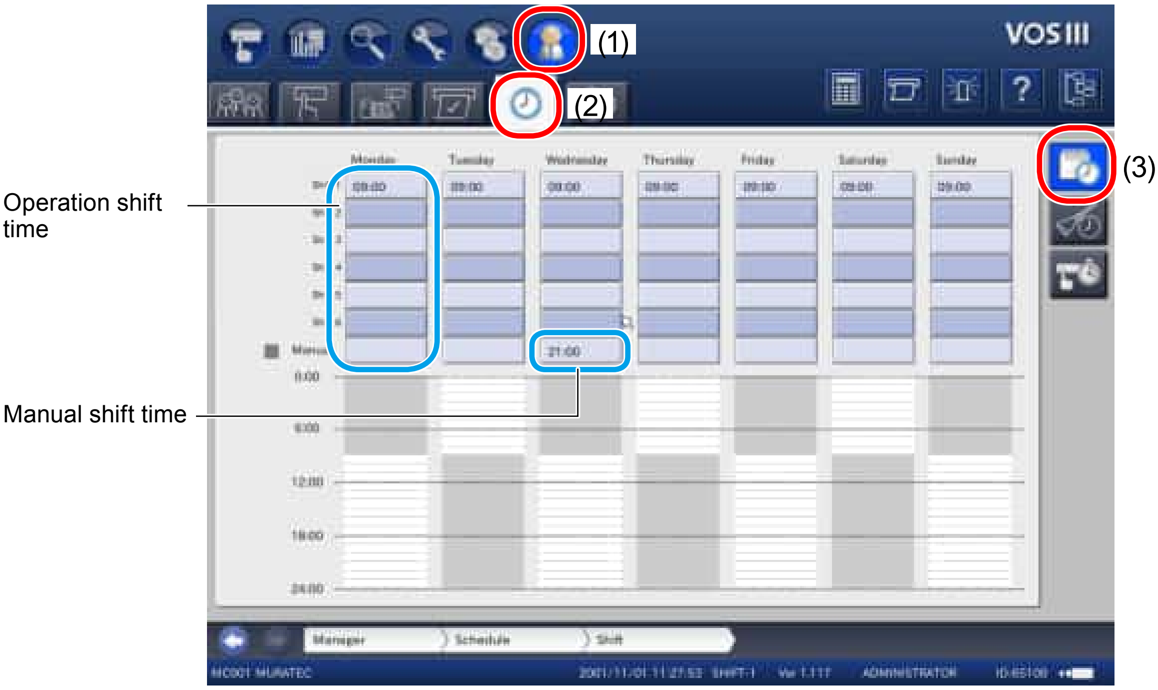
1 SEF%
2 AEF%
3 RT%
4 YF/Y
5 MIS%
6 MSL%
7 MLC%
8 NDOF

Data category described in sft report

☑ Machine data(MC)
☑ Group data(GR)
☐ Clearer cut data(CLR)
☑ Winding unit data(SP)
☐ Bad winding unit data(BSP)
☐ Alarm counts data(ALM)

<65100> Shift Schedule

The shift schedule can be set.

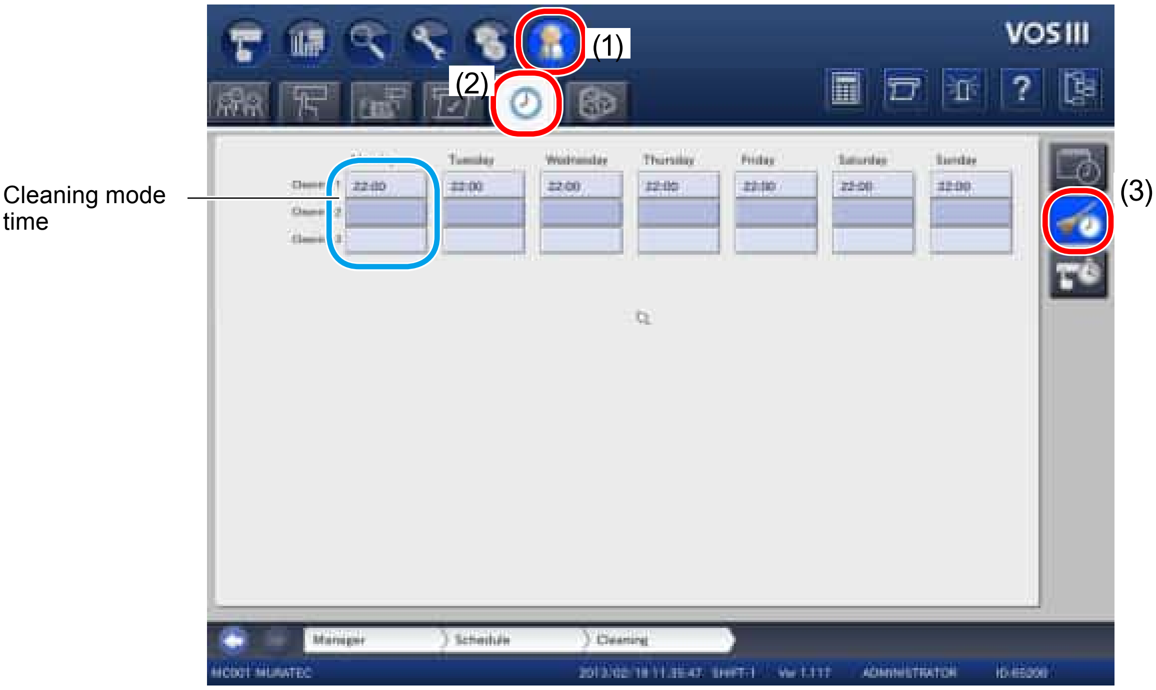


VOS III
(1)
(2)
(3)
Operation shift time
Manual shift time
Monday
Tuesday
Wednesday
Thursday
Friday
Saturday
Sunday
09:00
21:00
0:00
6:00
12:00
18:00
24:00
Manager
Schedule
Shift
MC001 MURATEC
2001/11/01 11:27:53 SHIFT-1
Ver 1.11T
ADMINISTRATOR
ID:65100

Operation shift time	Input the operation shift time. If you input for Monday, then the contents will be copied to all the days. To cancel, input OFF.
Manual shift time	Input the manual shift time when you want to make a special shift change, regardless of the operation shift time.

<65200> Cleaning

The cleaning mode schedule can be set.

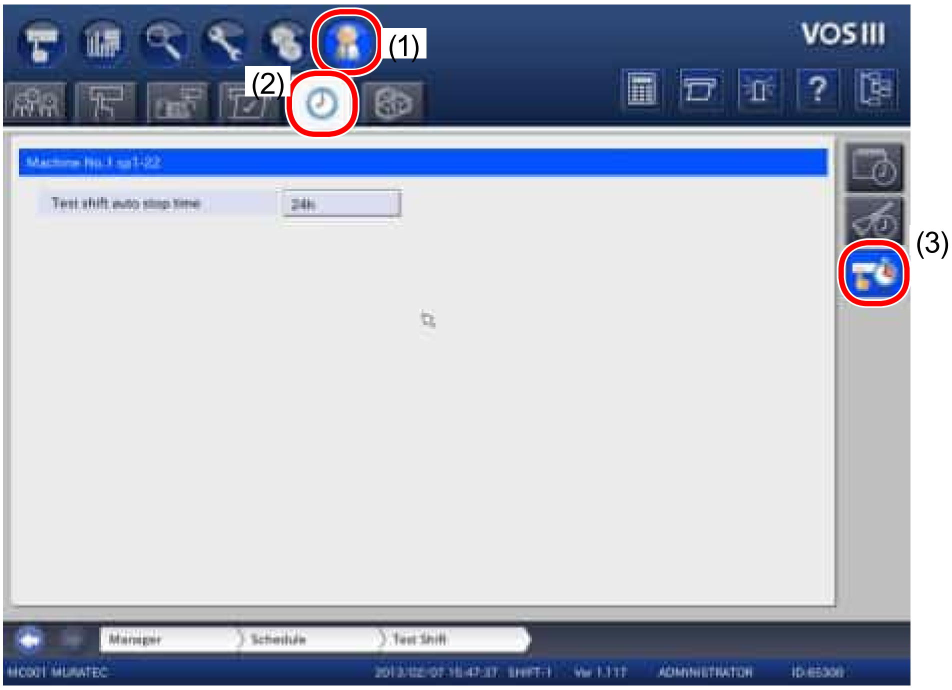

(1)
(2)
(3)
VOS III
Cleaning mode time
Manager
Schedule
Cleaning
MC001 MURATEC
2013/02/18 11:35:47 SHIFT-1 Ver 1.117 ADMINISTRATOR ID:65200

	[illegible]	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Cleani 1	22:00	22:00	22:00	22:00	22:00	22:00	22:00
Cleani 2							
Cleani 3							

Cleaning mode time	Input the cleaning mode time. If you input for Monday, then the contents will be copied to all the days. To cancel, input OFF.

<65300> Test Shift

The test shift time can be set.
When using the test shift function, the test shift will automatically end if the set time has elapsed.


(1)
(2)
(3)
VOS III
Manager
Schedule
Test Shift
MC001 MURATEC
2013/02/07 16:47:37 SHIFT-1 Ver 1.117 ADMINISTRATOR ID:65300

Machine No.1 sp1-22

Test shift auto stop time 24h

<66110~66150> Lot Batch Settings - Package (production)

You can perform all settings for package production in one batch for all lots.

<66210~66270> Lot Batch Settings - Package (quality)

You can perform all settings for the package quality in one batch for all lots.

<66310 - 66340> Lot Batch Settings - Unit Alarm

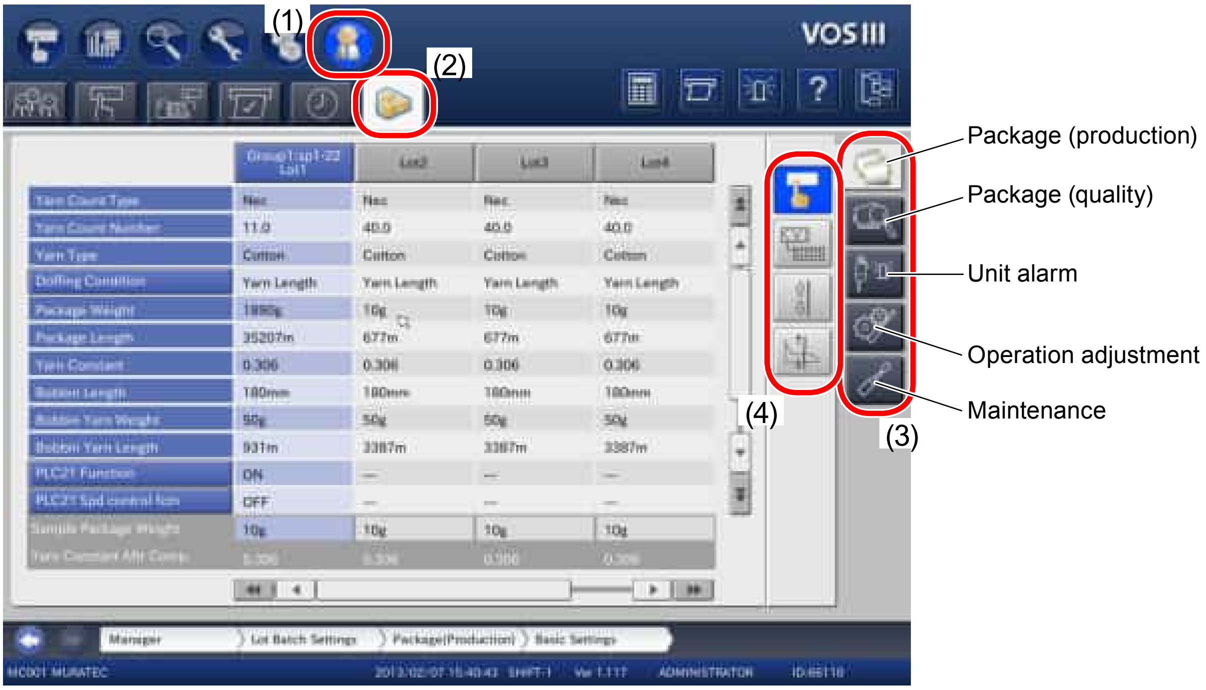
You can perform all settings for the winding unit’s alarms in one batch for all lots.

<66400 - 66420> Lot Batch Settings - Operation Adjustment

You can perform all settings for each device inside the winding unit in one batch for all lots.

<66510> Lot Batch Settings - Maintenance

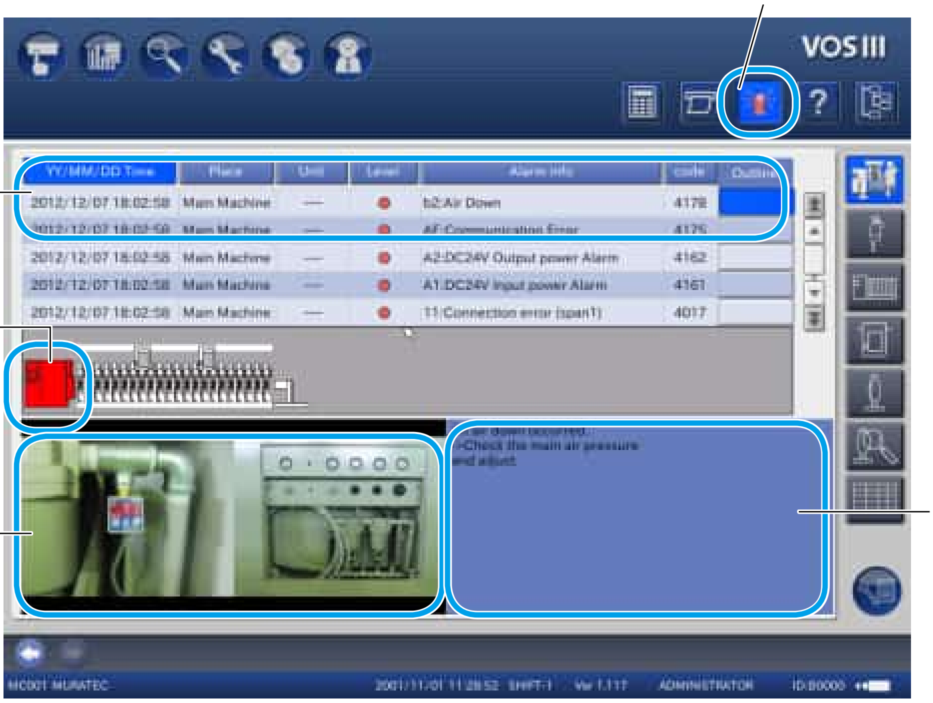
You can perform all maintenance settings in one batch for all lots.


(1)
(2)
(3)
(4)
VOS III
Package (production)
Package (quality)
Unit alarm
Operation adjustment
Maintenance
Manager
Lot Batch Settings
Package(Production)
Basic Settings
MC001 MURATEC
2013/02/07 15:40:43 SHIFT-1 Ver 1.117 ADMINISTRATOR ID:66110

	Group1:sp1-22 Lot1	Lot2	Lot3	Lot4
Yarn Count Type	Nec	Nec	Nec	Nec
Yarn Count Number	11.0	40.0	40.0	40.0
Yarn Type	Cotton	Cotton	Cotton	Cotton
Doffing Condition	Yarn Length	Yarn Length	Yarn Length	Yarn Length
Package Weight	1890g	10g	10g	10g
Package Length	35207m	677m	677m	677m
Yarn Constant	0.306	0.306	0.306	0.306
Bobbin Length	180mm	180mm	180mm	180mm
Bobbin Yarn Weight	50g	50g	50g	50g
Bobbin Yarn Length	931m	3387m	3387m	3387m
PLC21 Function	ON	—	—	—
PLC21 Spd control fcn	OFF	—	—	—
Sample Package Weight	10g	10g	10g	10g
Yarn Constant Aft Comp	0.306	0.306	0.306	0.306

Sec 9 Alarm Screens

The alarm screen displays a current list of alarms that have occurred. The details of each alarm and the support method are displayed with pictures.



Alarm icon
* Switches to the alarm screen.
(Icon flashes red when alarm occurs)

Current list of alarms that have occurred

Location of alarm (highlighted in red)

Picture of alarm location

Comment providing alarm details and support method

YY/MM/DD Time	Place	Unit	Level	Alarm info	code	Outlin
2012/12/07 18:02:58	Main Machine	—	●	b2:Air Down	4178	
2012/12/07 18:02:58	Main Machine	—	●	AF:Communication Error	4175	
2012/12/07 18:02:58	Main Machine	—	●	A2:DC24V Output power Alarm	4162	
2012/12/07 18:02:58	Main Machine	—	●	A1:DC24V Input power Alarm	4161	
2012/12/07 18:02:58	Main Machine	—	●	T1:Connection error (span1)	4017	

air down occurred.
->Check the main air pressure
and adjust.

Sec 10 Data Output

A data report for the shift and setting data can be downloaded onto a USB memory device.

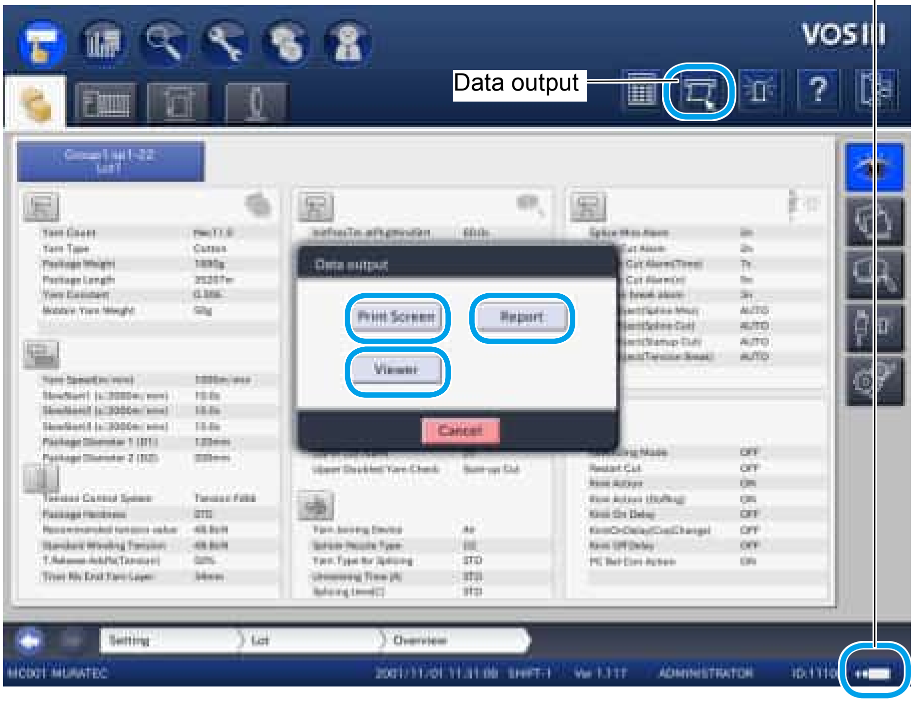
1. **Set up the USB memory and link it with the VOS.**

Hard Copy

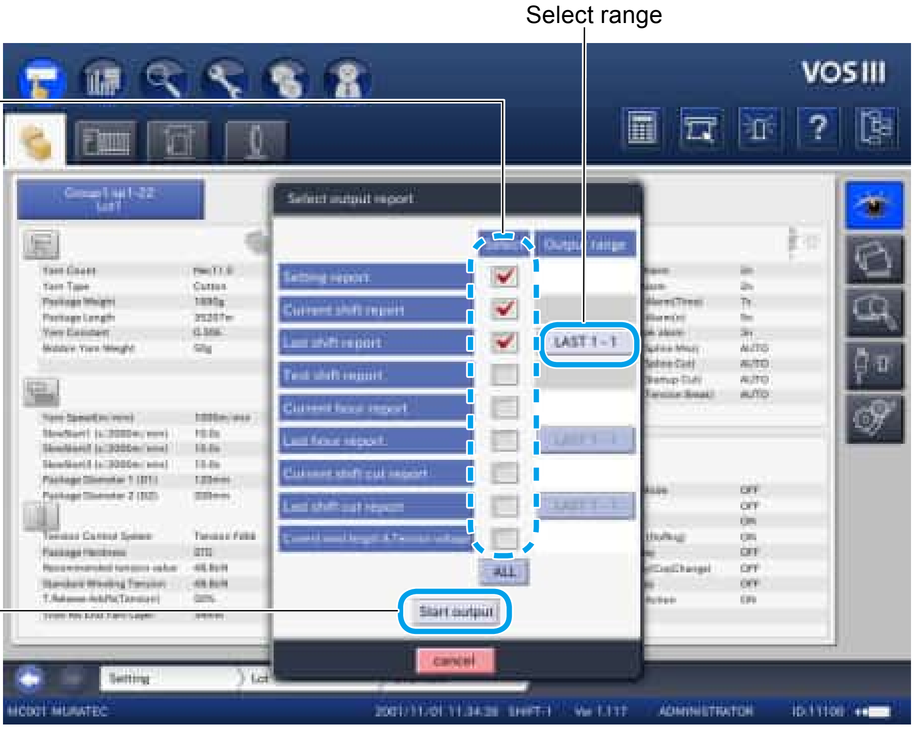
2. **Touch the data output icon to obtain a hard copy of the current screen (screenshot).**
3. **Touch “Hard copy.”**
   The hard copy data is output to the USB memory
   Touching “Viewer” enables you to check the downloaded hard copy.

Report Output

2. **Touch the data output icon.**
3. **Touch “Report.”**


VOS III
Data output
Data output
Print Screen
Report
Viewer
Cancel
Setting
Lot
Overview

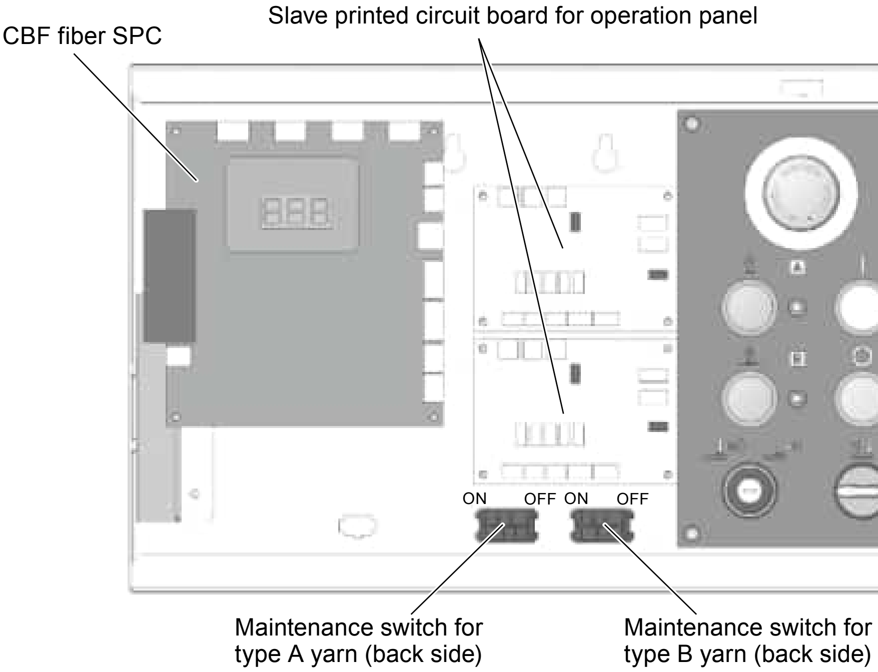
4. **Touch the report you want to output.**
   * Select the range when necessary
5. **Touch "Start output."**


Select range
VOS III
Select output report
Output range
Setting report
Current shift report
Last shift report
Test shift report
Current hour report
Last hour report
Current shift cut report
Last shift cut report
LAST 1 - 1
ALL
Start output
cancel
Setting

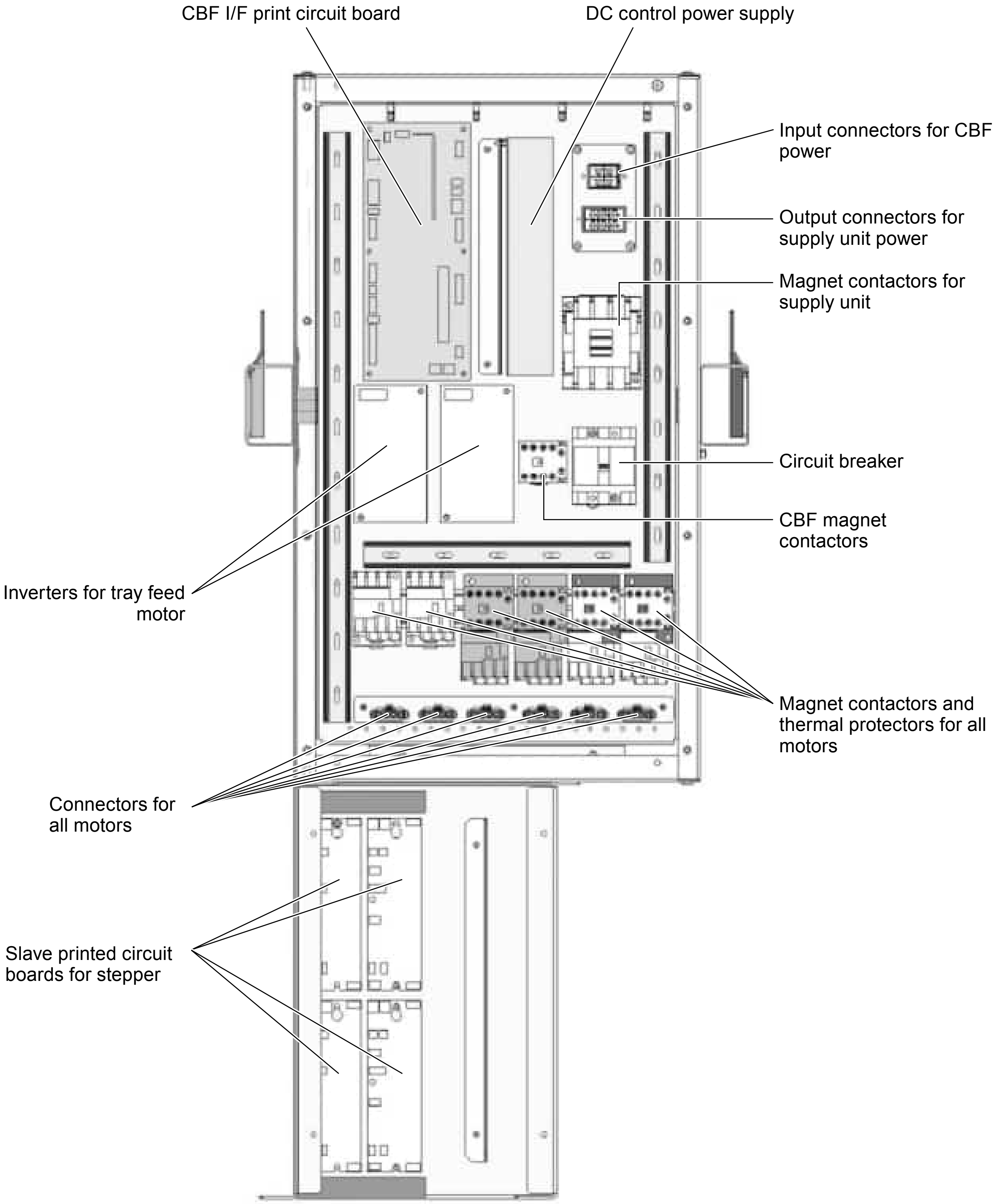
muratec

Sec 1 Layout of Electrical Equipment

1-1 Operation Panel


Slave printed circuit board for operation panel
CBF fiber SPC
ON
OFF
ON
OFF
Maintenance switch for type A yarn (back side)
Maintenance switch for type B yarn (back side)

1-2 Control Box


CBF I/F print circuit board
DC control power supply
Input connectors for CBF power
Output connectors for supply unit power
Magnet contactors for supply unit
Circuit breaker
CBF magnet contactors
Inverters for tray feed motor
Magnet contactors and thermal protectors for all motors
Connectors for all motors
Slave printed circuit boards for stepper

Sec 2 Operation Settings

2-1 VOS Settings

The VOS settings are listed below. Change the setting conditions when necessary.

[CBF basic settings]

CBF Startup Mode Setting	Set CBF startup mode
Bad Bobbin Auto Removal	---
A Line (Unit) Range	Set group(s) for winding units on line A
B Line (Unit) Range	Set group(s) for winding units on line B
Yarn Type	Set yarn type for each line
Twist Drctn	Set twist direction for each line
Bobbin Bunch	Set bobbin bunch position
No.of AutoFedBobs-Byps	Set number of bobbins that can be held on bypass line * When set to “0,” if 8 or more bobbins build up on bypass line, operator call occurs. * When 3 or more empty bobbins build up on bypass line, tray is fed automatically regardless of settings.
CBF Lot Change Selection	Set lot change mode for CBF **●MODE-1: Chute bobbin winding mode** This mode is used when all bobbins currently in CBF are to be wound rather than performing another chute operation. - Chute unit: Chute operation is stopped - Yarn end finder: In addition to normal operation, empty trays are supplied to winding unit - Ejector: Normal operation **●MODE-2: Automatic ejection mode** In this mode, all bobbins are rotated in CBF and ejected by bobbin ejector. Then empty trays are supplied to winding unit. This mode is used when bobbins in CBF need to be automatically ejected. - Chute unit: Chute operation continues until supply unit is empty - Yarn end finder: Yarn end finding operation is not performed, and all trays except empty ones are supplied to bypass line - Ejector: All bobbins are ejected **●MODE-3: All bobbins under unit ejection mode** All bobbins returning from winding unit are ejected rather than performing another chute operation. - Chute unit: Chute operation is stopped - Yarn end finder: Yarn end finding operation is not performed, and all trays except empty ones are supplied to bypass line - Ejector: All bobbins are ejected **●MODE-4: Supplied bobbin winding mode** This mode is used when all bobbins, including ones in the supply unit (parts feeder, etc.), are fully wound - Chute unit: Chute operation continues until supply unit is empty - Yarn end finder: In addition to normal operation, empty trays are supplied to winding unit - Ejector: Normal operation

[Yarn end finder]

YarnEndFinder Spd Setup	Set feed time for yarn end finder to one of three levels
No. of YEF Attempts	Set Cop-Robo yarn end finder search count
Yarn Holding Lever Setup	Set yarn holding lever motion at mouth
Suction Shutter Open Tm	Set head suction shutter release time
Mouth Lowering Time	Set Cop-Robo mouth lowering time
Shutter Cutter Timing	Set timing to close shutter’s cutter after successfully detecting the yarn end with Cop-Robo
VORTEX Motion Setup	Set VORTEX blast pattern
Searcher Operating Time	Set searcher operation time
Beater Motion Setup	Set motion mode for beater
Beater On Delay Time	Set beater ON delay time
R.Cutter Operating Time	Set operation time for rotary cutter
YEF Detection Forced On	When turned ON, this setting assumes yarn end was found for all bobbins (regardless of yarn end detection sensor activity) and they are supplied to winding unit
Slub Yarn Function	This function is used to prevent malfunction due to slab yarn being pulled apart. The detection time for the yarn end detection sensor is extended at yarn end finder (YEF).
YEF Yarn End Removal	Cop-Robo takes up and removes yarn waste from bobbin at end of winding operation for preset duration. When turned ON, the yarn end is taken up and removed for preset duration, after yarn end is found and while shutter’s cutter is kept open without yarn holding lever pressing bobbin.
YEF Yarn End Remov. Time	Set take-up time for YEF yarn end
Feed C/V Dischge Delay	When turned ON, tray feed in front of rotary cutter position is controlled so that only one bobbin is supplied to rotary cutter position

[Bobbin stripper]

StripperThroughputSetup	Set capacity for bobbin processing to one of the four levels
Bobbin Stripper Clamp	Set bobbin stripper clamp count
Stripper Clamp Time	Set base time for clamp
Stripper Clamp Add. Time	Set amount of time to be added per clamp count
Bobbin Stripper Cutter	Enable or disable bobbin stripper cutter, and set its frequency of operation

[Bobbin ejector]

Ejector Motion Setup	Set bobbin ejector settings - Empty B Only: (Empty Bobbins Only) Only empty bobbins and skinny bobbins are ejected - Eject all B: (Eject All Bobbins) All bobbins are ejected - 2disch/3min: All Eject: When bypass line performs two automatic ejections within three minutes, all bobbins are ejected when bobbins are fed from bypass. For bobbins other than said condition (not from bypass), only empty bobbins and skinny bobbins are ejected. - All (Bypass): Eject all bobbins that are fed from bypass line. For bobbins other than said condition (not from bypass), only empty bobbins and skinny bobbins are ejected.
Ejector/SupplyUnit Setup	Set capacity of bobbin ejector and bobbin supply unit processing to one of four levels
Ejector Discharge Setup	When turned ON, all bobbins removed by bobbin ejector are assumed to be skinny bobbins and they are automatically fed (forced) to skinny bobbin side on ejector

[Supply part]

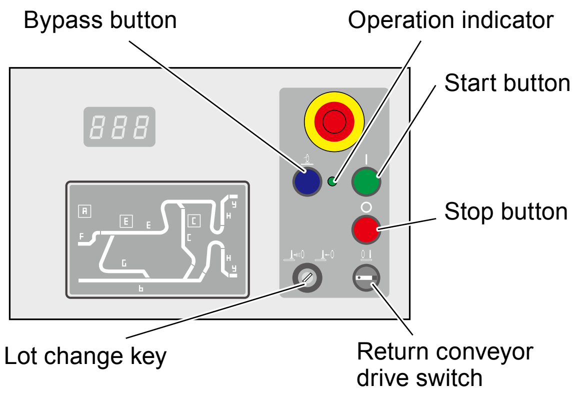
BR - No. of mouth actions	Set the number of mouth actions for the bunch remover
BR - Mouth operation time	Set the mouth operation time for the bunch remover
BR - Suction time	Set the suction operation time for the bunch remover

[Spin inspector]

Bad Bobbin Auto Removal	Turn ON (when using spin inspector specification) - Defective bobbins ejected from the winding unit are transported to separate line for inspection

Sec 3 Switch Operation

* Refer to Chapter 8G for details on the hoist switch operations.



3-1 Startup

Starting the Winder

The winder must be started before operating the CBF.

1. **Turn ON the winder main switch and press the start button on the winder operation panel.**

CAUTION

> If you select the CBF startup mode for starting it together with the winder on the VOS screen (initial settings), the CBF will start automatically. Therefore, always make sure that the CBF is safe and secure before you press the winder start button.

Starting the CBF

* When "Manual Start" is set on the VOS screen

1. **Press the start button on the CBF operation panel while the winder is operating.**
   The CBF will start automatic operation.

3-2 Stoppage

Stopping the CBF

1. **Press the stop button on the CBF operation panel.**
   Press this button to temporarily stop the CBF only.

Stopping the Winder

1. **Press the stop button on the winder operation panel.**
2. **Turn OFF the winder main switch.**

* To stop the winder and the CBF simultaneously, press the stop button on the winder operation panel.

CAUTION

> When using an AD (Auto Doffer) specification, the AD finishes operation within a certain period of time after pressing the stop button on the winder switch panel.
> Therefore, press the stop button, and wait for at least 20 seconds, before turning OFF the winder main switch.

3-3 Feeding Bobbins from the Bypass Line

Starting the Winder

1. **Press the bypass button on the CBF operation panel.**
   The bobbins currently waiting on bypass line are fed, regardless of the bobbin number setting for automatic bypass feeding.

3-4 Return Conveyor Drive Switch

Starting the Conveyor

1. **Turn ON the drive switch and press the start button on the winder operation panel.**

Stopping the Conveyor

1. **Turn OFF the drive switch.**

* This switch is used for cleaning and performing machine maintenance.

3-5 Lot Change Key Switch

Turning ON the lot change key engages the machine into lot change mode.
The lot change key operation varies depending on the VOS settings. Refer to Chapter 7 for operation details.

: Switch during normal operation.

: Switch during lot change.

3-6 Maintenance Switch

Turning ON the maintenance switch, located on the back of the CBF operation panel, engages the machine into maintenance mode.

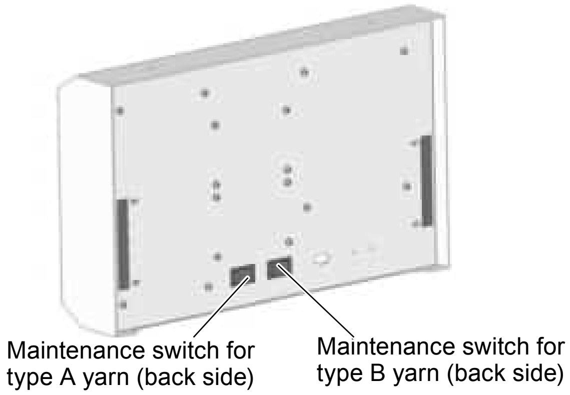
* The operation indicator flashes when engaged in maintenance mode.

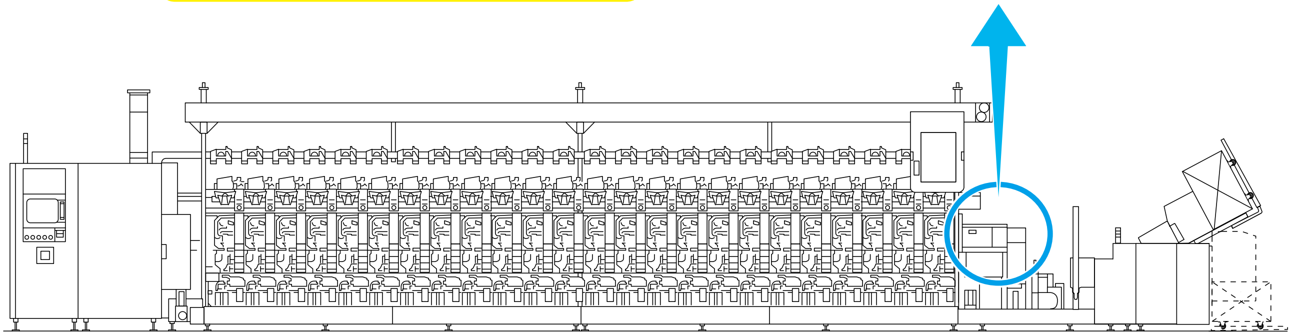
* The CBF does not operate when engaged in maintenance mode even if the start button is pressed.
This switch is used for cleaning and performing machine maintenance.

* To restart, turn OFF the switch and press the start button.

CAUTION

If the operation indicator (green LED) is flashing without the CBF starting, ensure that the maintenance switch is not turned ON.


Maintenance switch for type A yarn (back side)
Maintenance switch for type B yarn (back side)



Sec 4 Emergency Stop

Emergency Stop Operations

If it is necessary to stop the winder immediately to avoid injury or further machine damage, use one of the following switches to bring all operations on the machine to an immediate stop.

- **Press the emergency stop switch on the CBF operation panel**

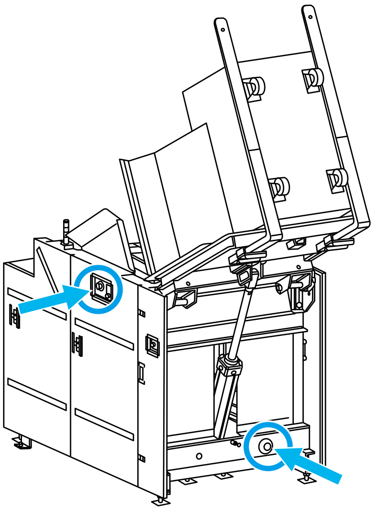
[When restarting operation]

1. **Turn the locked emergency stop switch to the right to release.**
2. **Press the start button on the machine operation panel.**

- **Turn OFF the main switch.**

[When restarting operation]

1. **Turn ON the machine main switch.**
2. **Press the start button on the machine operation panel.**



- **Press the emergency stop switch on the hoist**
  (Only when using a parts feeder specification)
  - Side operation panel
  - Lower section of hoist

[When restarting operation]

1. **Turn the locked emergency stop switch to the right to release.**
2. **Press the start button on the machine operation panel.**

CAUTION

Bringing the machine to a stop in the middle of an operation will cause the machine to overload. Do not use the emergency stop switch unnecessarily, or unless it is an emergency.

Sec 5 Indicator Display

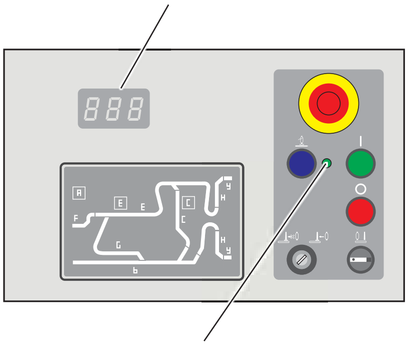
CBF Operation Panel

- **Operation indicator (green LED)**

Lit	CBF in operation
Flashing (2 second intervals)	Engaged in maintenance mode
Flashing (1 second intervals)	Bobbin removed at Cop-Robo

- **CBF alarm indicator**
  An alarm code number will appear in the 7-segment display (3 digits) on the CBF fiber SPC.

CBF alarm indicator



Operation indicator

Signal Tower on Main Control Box

[Link Coner]

	Lit	Flashing
Red	- CBF error - Feed conveyor tray jammed - Steam setter problem	Emergency stop (2 second intervals)
Yellow	Waiting for spinning-bobbins from the spinning frame	- Bypass line is full, or eight bobbins are waiting with automatic feed from bypass line turned OFF (0.2 second intervals) - Spinning frame problem (2 second intervals) - Inspector conveyor full (0.2 second intervals) (for spin inspector specification only)
Green	Operating	---

[Bobbin Tray]

	Lit	Flashing
Red	- CBF error - Feed conveyor tray jammed	Emergency stop (0.2 second intervals)
Yellow	- Bobbin supply is delayed (Setting available to enable/disable display on VOS) - Parts feeder hoist at top end position (Setting available to enable/disable display on VOS)	Bypass line is full, or eight bobbins are waiting with automatic feed from bypass line turned OFF
Green	Operating	---

Rotating Light at the Winder Out-end (flashing only)

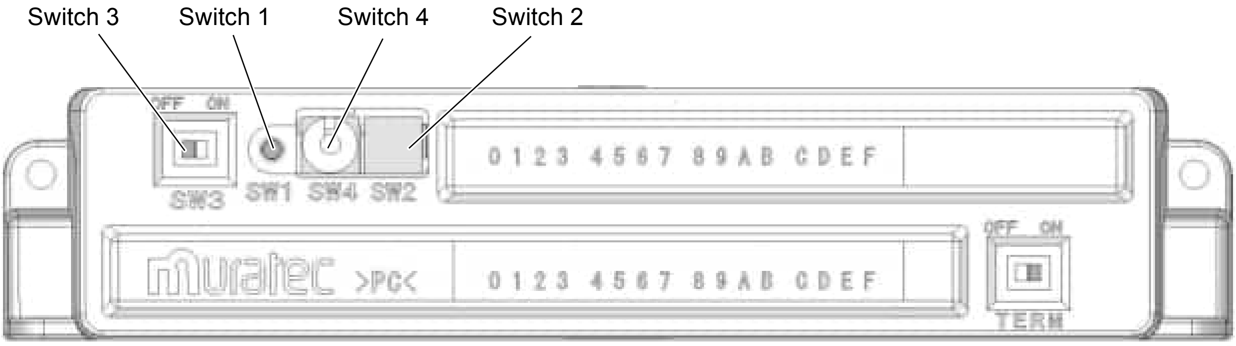
[Link Coner]

	0.2-second intervals	1-second intervals	2-second intervals
Red	- CBF error - Steam setter problem	---	- Spinning frame problem - Emergency stop
Yellow	- Bypass line is full, or eight bobbins are waiting with automatic feed from bypass line turned OFF - Inspector conveyor full (for spin inspector specification only)	---	---

[Bobbin Tray]

	0.2-second intervals	1-second intervals	2-second intervals
Red	CBF error	Bypass line full	Emergency stop
Yellow	- Bypass line is full, or eight bobbins are waiting with automatic feed from bypass line turned OFF - Bobbin supply is delayed (Setting available to enable/disable display on VOS) - Parts feeder hoist at top end position (Setting available to enable/disable display on VOS)	---	---

Sec 6 Input/Output Check Operation



6-1 Input Check

Use the slave I/O to check the input. Check the ON/OFF settings for the corresponding input number.

[Ex:] When X20 is “0,” and X7E is “E”

6-2 Force Output Mode

You can check the output by using the force output mode on the slave printed circuit board.

Remote I/O Slave

When SW3 is turned ON, the slave will engage in force output mode. You can check the output by selecting the locations that you want to check with SW4 (16 locations) and turning SW1 ON.

* Refer to the electrical drawing for details on the output No.

1. **Stop the CBF.**

   * Perform the following procedure on each applicable slave.

2. **Turn SW3 ON.**
3. **Adjust SW4 to the last digit in the device number of the device that needs to be checked.**

   [Ex:] For Y23A, set to “A,” and for Y261, set to “1”

4. **Turn SW1 ON and check the output.**
5. **After checking, turn SW3 OFF and cancel the output mode.**

   * When SW1 is held down for five seconds or longer, the output status will be maintained. When SW1 is pressed again, the output status will be cancelled.

   * The output status can be maintained at any number of locations at a time.

   * When engaged in force output mode, the CBF alarm indicator will display “– – –.“

Slave I/O 5/5

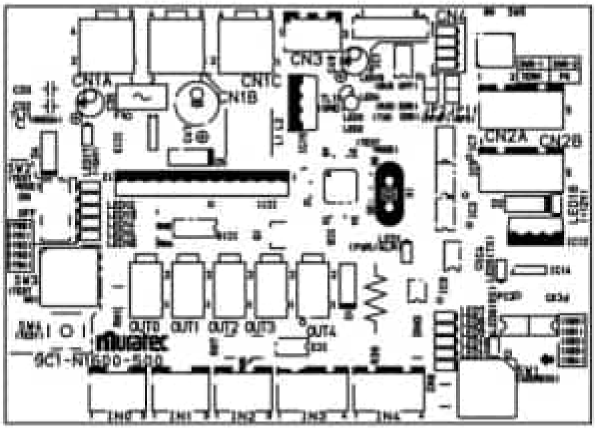
1. **Stop the CBF.**

   * Perform the following procedure on each applicable slave.

2. **Turn SW2 ON.**
3. **Adjust SW3 to the last digit in the device number of the device that needs to be checked.**

   [Ex:] For Y23A, set to “A,” and for Y261, set to “1”

4. **Turn SW4 ON and check the output.**
5. **After checking, turn SW2 OFF and cancel the output mode.**

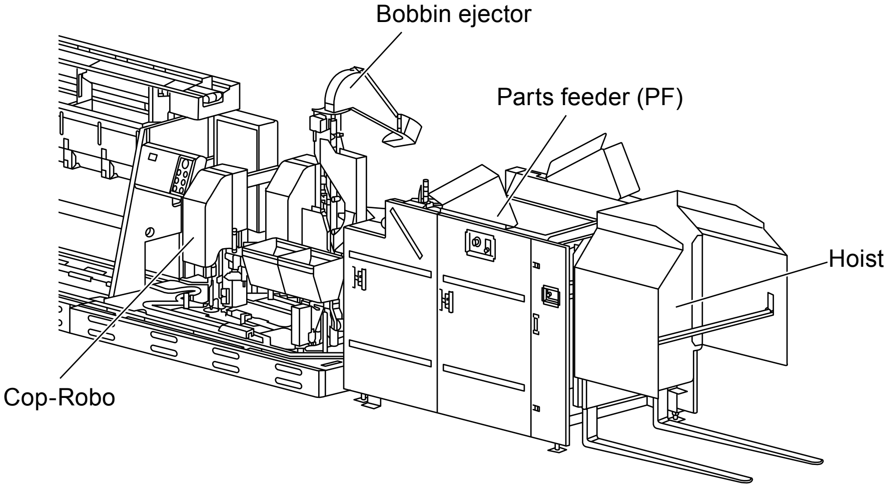

CN4
CN3
CN1A
CN1C
CN1B
CN2A
CN2B
OUT0
OUT1
OUT2
OUT3
OUT4
muratec
9C1-N1600-500
IN0
IN1
IN2
IN3
IN4

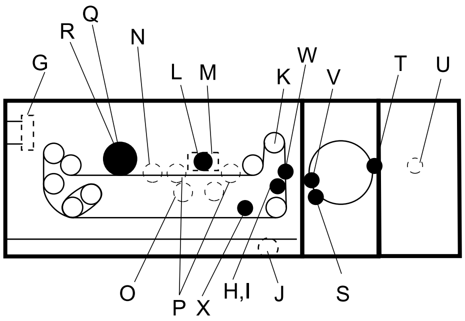
CAUTION

If you switch to force output mode during the CBF operation, the operation will stop.

Maintenance

Sec 1 Maintenance Locations


Bobbin ejector
Parts feeder (PF)
Hoist
Cop-Robo

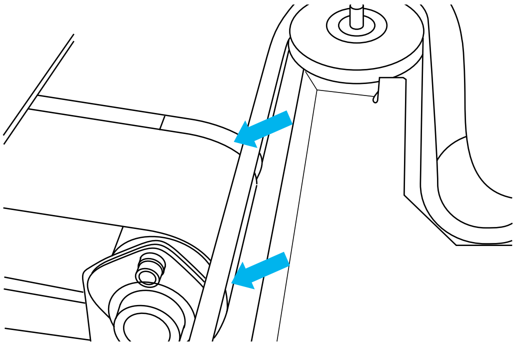

R
Q
N
G
L
M
W
K
V
T
U
O
P
X
H,I
J
S

* The above diagram shows a Bobbin Tray type (with hoist), left-hand type, 1 yarn type machine.

* H, I, S, T, U, V, W are only applicable to the Bobbin Tray type machines.

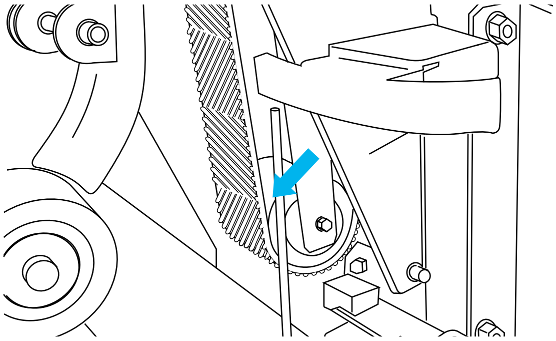
G. Conveyor Pulley

Remove yarn waste and cotton fly once a week



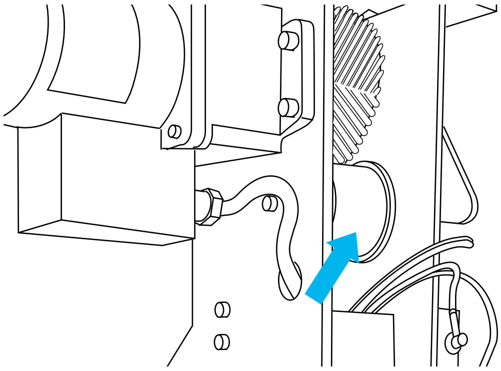
H. Bobbin ejector pulley

Remove yarn waste once a day



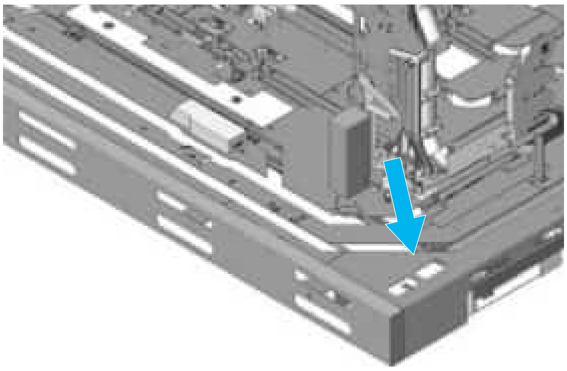
I. Bobbin ejector pulley

Remove yarn waste once a day



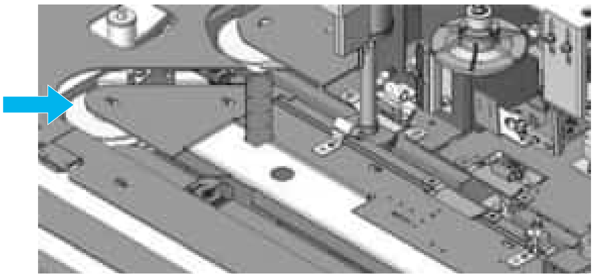
J. Return conveyor

Remove yarn waste once a day



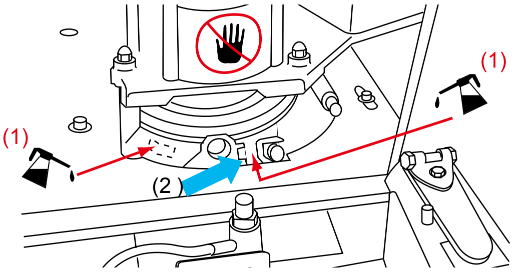
K. Round belt pulley

Remove yarn waste once a week



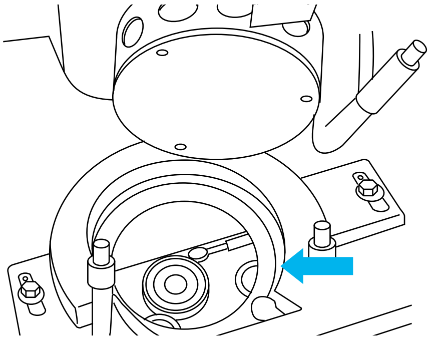
L. Rotary cutter

- Lubricate the sliding cutter once a day (SO VG10)
  * If the cutter has a felt, lubricate it once a week
- Check for cutting performance, and remove yarn waste and cotton fly once a day



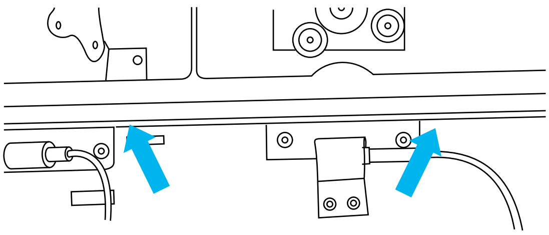
M. Rotary cutter

Remove yarn waste and cotton fly once a week



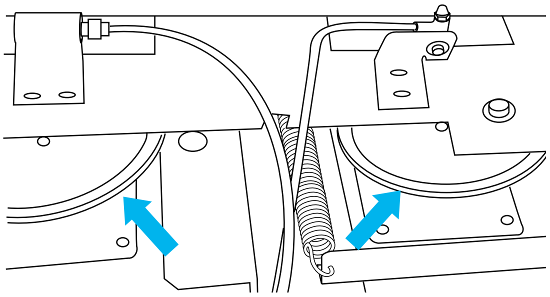
N. Round belt

Remove yarn waste and cotton fly once a day



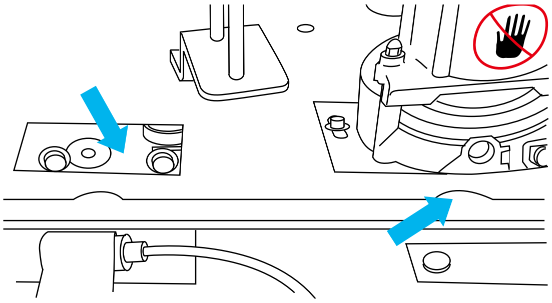
O. Tray rotating pulley

Remove yarn waste once a week



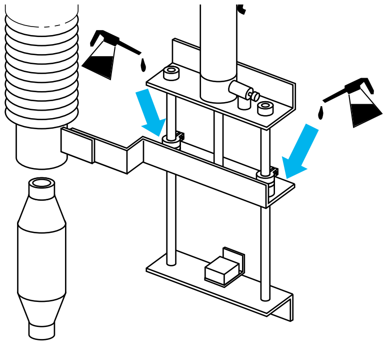
P. Tray stopper bearing

Check for smooth rotation and remove yarn waste once a day



Q. Cop-Robo yarn end finder’s sliding shaft

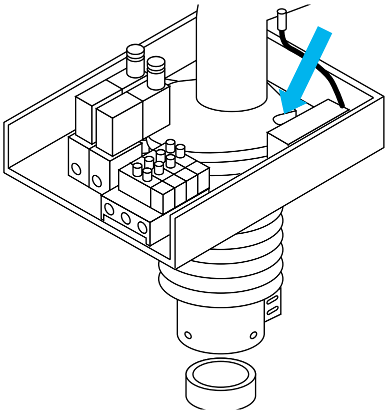
Lubricate once a month



Lubricate the spindle bearings with two or three droplets of spindle oil once a month.
Before applying, use the solenoid valve’s manual operation button to lower the cylinder.

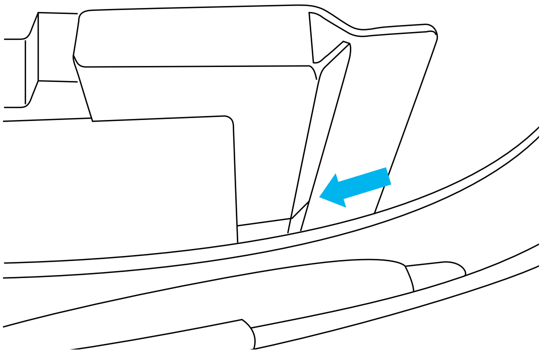
R. Cop-Robo yarn end finder’s shutter cutter

Check for cutting performance and lubricate once a month



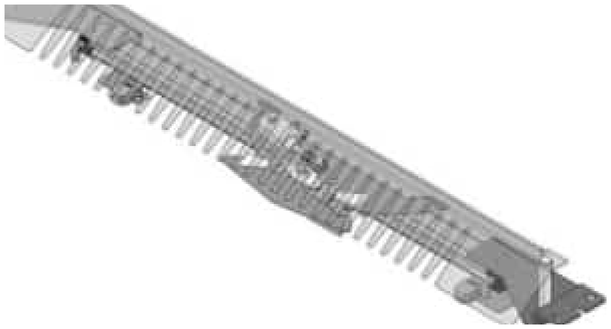
S. Parts feeder exit cutter (Bobbin Tray type)

Check for cutting performance once a day



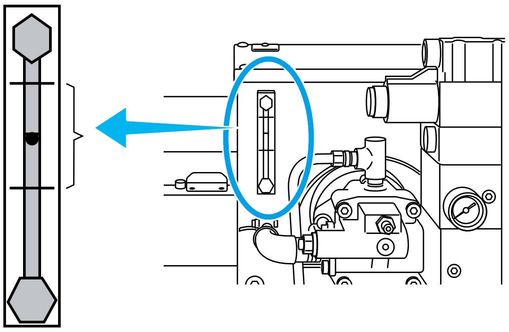
T. Vibrating conveyor exit cutter (Bobbin Tray type)

- Check for cutting performance and remove yarn waste and cotton fly once a day
- Lubricate once a week



U. Hoist Hydraulic Pump Fluid Indicator (Bobbin Tray type)

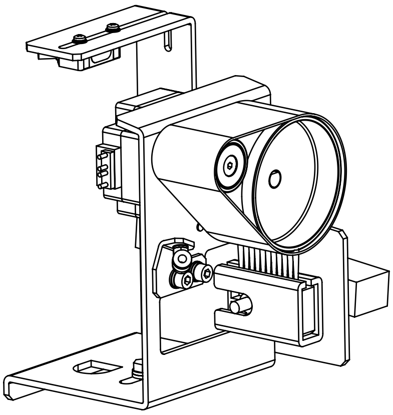
Check fluid level once a week



- The hydraulic pump fluid indicator is just inside the hoist door. Verify that the fluid level falls within the indicated range
- Oil change once a year
- Clean or replace the suction strainer when changing the oil

V. Feed Roller (Bobbin Tray type)

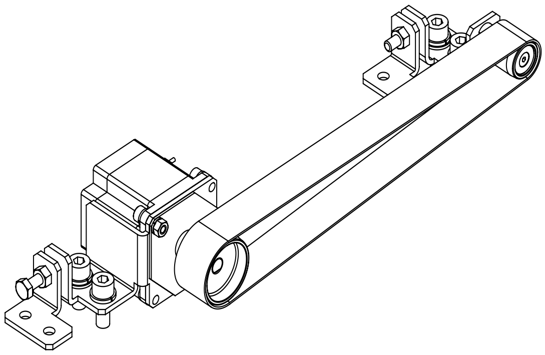
- Remove yarn waste and cotton fly once a day
- Check for smooth rotation once a day
- Check the belt for wear and tear once a month



W. Flat Belt Conveyor (Bobbin Tray type)

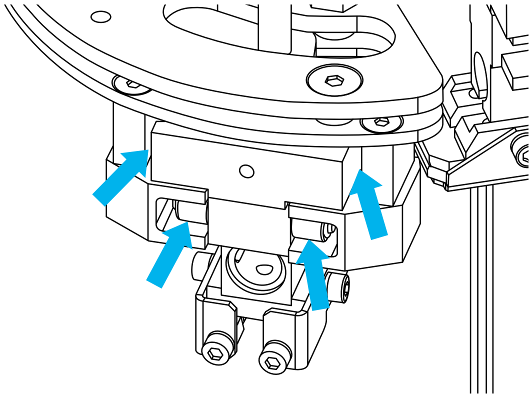
* Lower part of chute, bypass area for Cop-Robo x 2 specification, bobbin ejector horizontal conveyor for 2 yarn type specification.

- Remove yarn waste and cotton fly once a day
- Check for smooth rotation once a day
- Check the belt for wear and tear once a month



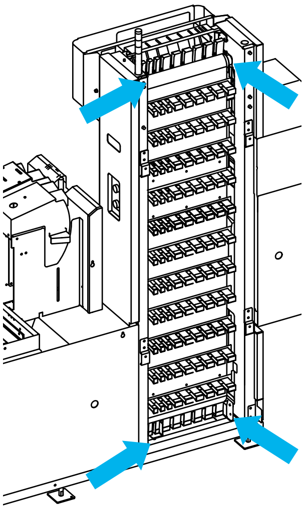
X. Bobbin stripper clamp's rollers (Link Coner type)

Apply grease once a month



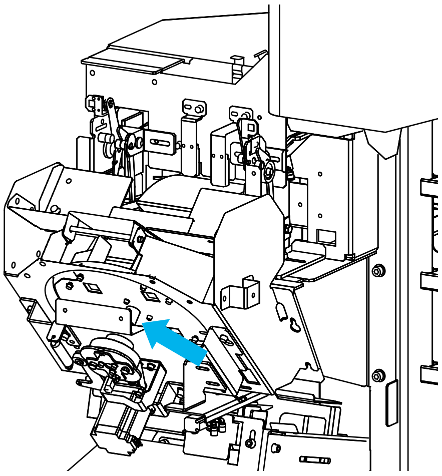
A. Vertical conveyor flat belt pulley

- Remove yarn waste and cotton fly once a day
- Check for smooth rotation once a day
- Check for belt damage once a month



B. Rotor rotation

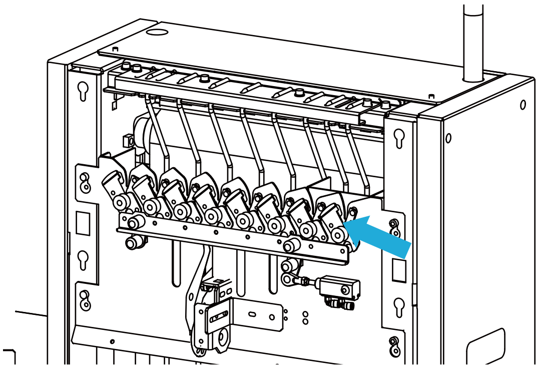
- Remove yarn waste and cotton fly once a day
- Check for smooth rotation once a day



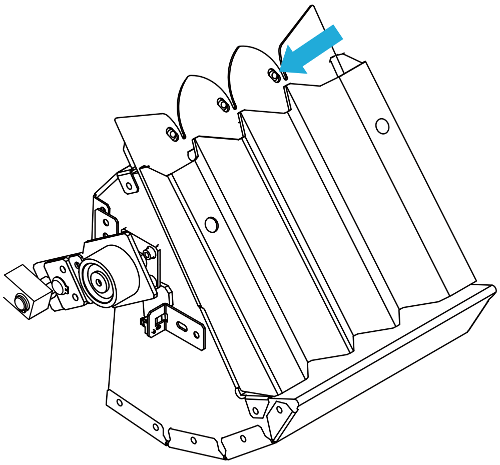
C. Each part of cutter

- Remove yarn waste and cotton fly once a day
- Check for cutting performance and lubricate once a month

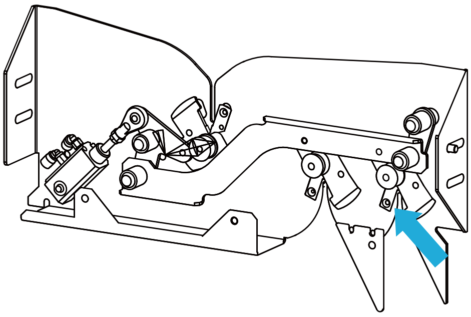
Conveyor’s top cutter



Dam cutter

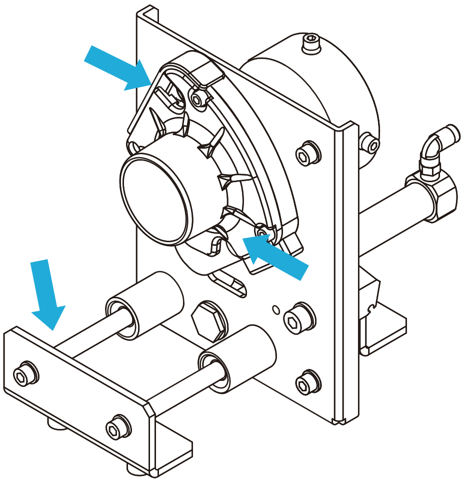


Conveyor’s bottom cutter



D. Bunch remover suction

- Check for cutting performance and lubricate shutter cutter once a month
- Remove yarn waste and cotton fly from shutter cutter and slide shaft once a month
- Lubricate slide shaft once a month



Sec 2 Maintenance

2-1 Inspection

CAUTION

Before performing inspections, be sure to bring the winder to a complete stop.
Performing inspections with the winder in operation may result in serious injury.

Frequency	Item	Location	Guideline
Daily	Winder	---	Cleaning with compressed air
	Rotary cutter	L	Remove yarn waste and check for cutting performance
	Vibrating conveyor exit cutter	T	Check for cutting performance and remove cotton fly
	Parts feeder exit cutter	S	Check for cutting performance
	Tray stopper bearings	P	Remove yarn waste and check for bearings' smooth rotation.
	Round belt, Flat belt	N, V, W	Remove yarn waste and cotton fly
	Bobbin ejector pulleys	H, I	Remove yarn waste
	Vertical conveyor flat belt pulley	A	Remove yarn waste and cotton fly, and check for smooth rotation
	Rotor rotation	B	Remove yarn waste and cotton fly, and check for smooth rotation
	Each part of cutter	C	Remove yarn waste and cotton fly
Weekly	Round belt pulleys	K	Remove yarn waste
	Tray rotating pulleys	O	Remove yarn waste
	Rotary cutter	M	Remove cotton fly
	Return conveyor	J	Remove cotton fly
	Hoist hydraulic pump fluid indicator	U	Check fluid level
	Vibrating conveyor exit cutter	T	Lubricate
Monthly	Cop-Robo yarn end finder's shutter cutter	R	Check for cutting performance
	Cop-Robo yarn end finder's sliding shaft	Q	Lubricate the sliding bearing
	Round belt, Flat belt	N, V, W	Check the belt for wear and tear
	Bobbin stripper clamp's rollers	X	Apply grease
	Vertical conveyor flat belt pulley	A	Check for belt damage
	Each part of cutter	C	Check for cutting performance and lubricate
	Shutter cutter on bunch remover	D	Check for cutting performance, lubricate, and remove yarn waste and cotton fly
	Slide shaft on bunch remover	D	Lubricate slide bearing, and remove yarn waste and cotton fly

* Refer to Chapter 8B, section 1 for "Location".

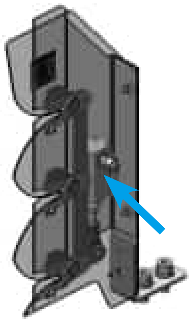
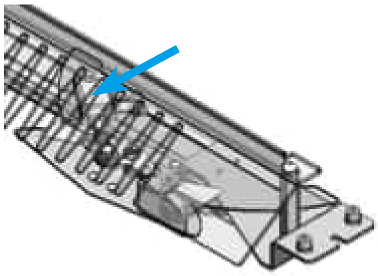
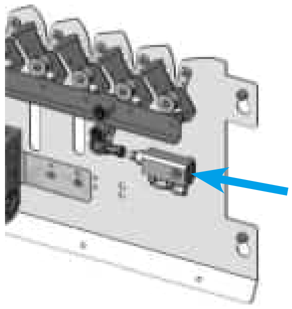
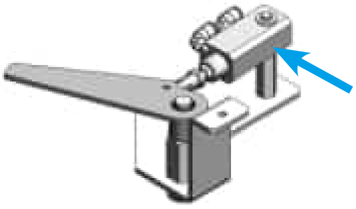
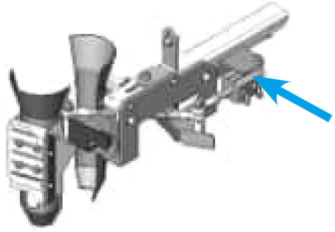
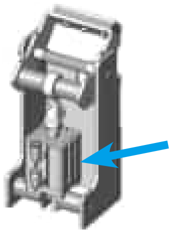
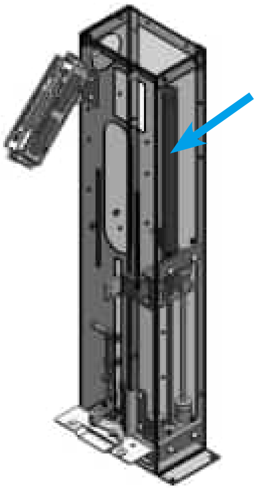
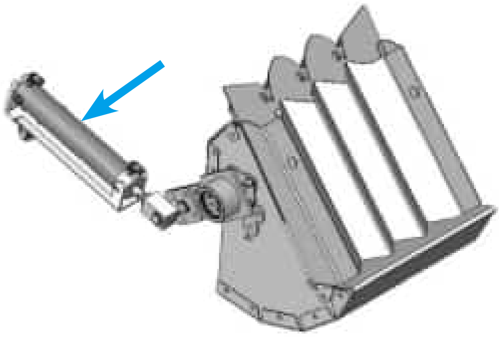
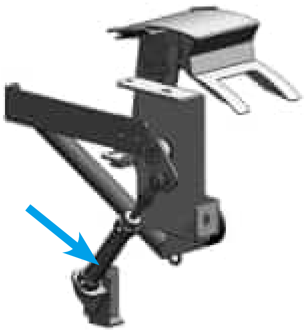
* If there are any worn parts found during the checks described above, replace with new ones.

2-2 Packing of the Air Cylinder Replacement

Check the operation of the cylinder at regular intervals, and replace the packing if any of the following occur:

- The cylinder does not operate smoothly
- There is a change in piston speed or cycle time
- There is an irregularity in the stroke

Locations of Cylinders with Replaceable Packing

Cylinder	Location used
A	CBF conveyor cutter  Vibrating conveyor exit cutter (Bobbin Tray specification only)  Cutter for VCF (conveyor cutter, shutter cutter)  Tray stoppers and separator  Chute (Bobbin Tray specification only)  Bobbin holder (VCF only) 
B	Cop-Robo suction mouth  Dam (VCF only) 
C	Bobbin pusher on top/bottom feeler (Bobbin Tray specification only) 

Grease

Grease specifications	Grease product name
Please be sure to use the grease that comes with the packing set	
Mineral oil-base lithium extreme pressure grease NLGL No.1,No.2	Cosmo Oil: Cosmo Grease Dynamax Idemitsu: Daphne Eponex Grease Shell: Alvania EP grease

* When using any grease other than the grease pack, please remove the existing grease before applying the new grease.
* Please avoid mixing different grades of grease, even if they are from the same brand.
* For details of what is required when applying the grease, please refer to the instructions of the brand and grade of grease.

CAUTION

Using any type of grease other than those specified, or using a liquid lubricant agent, will degrade the rubber that forms the material of the packing, even if the lubricant temporarily offers lubrication properties. In addition, using such lubricants may also shorten the operating life of the cylinder itself.

Cylinder Disassembly & Reassembly

Please disassemble and reassemble the cylinder in a clean location. In addition, please remove any external dirt. Please be especially careful of the piston rod surface and collar.

* Refer to Chapter 8B, 2-2 for packing removal, grease application, and packing attachment.

- A

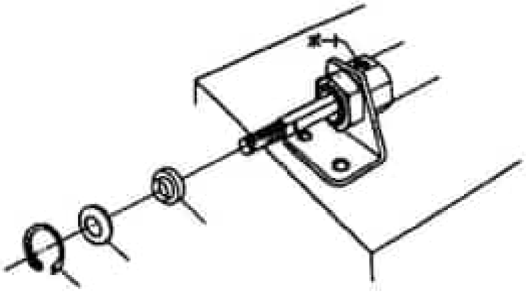
1. **Press the clevice bush out from inside the cylinder.**
   * Please be careful not to damage the bush.
2. **Extract the piston rod from the body.**
   * To reassemble the cylinder, perform the removal procedure.

- B

1. **Hold the double bevel on the cylinder body rear in place with a vice or similar tool.**
2. **Loosen and remove the double bevel on the rod side with a spanner, monkey wrench or other tool.**
   * When reassembling the cylinder, please tighten 2° more than it was before.

- C

The cylinder body and the cover on the back end of the cylinder are bonded together by crimping, and therefore it cannot be disassembled. Only the rod packing can be replaced.



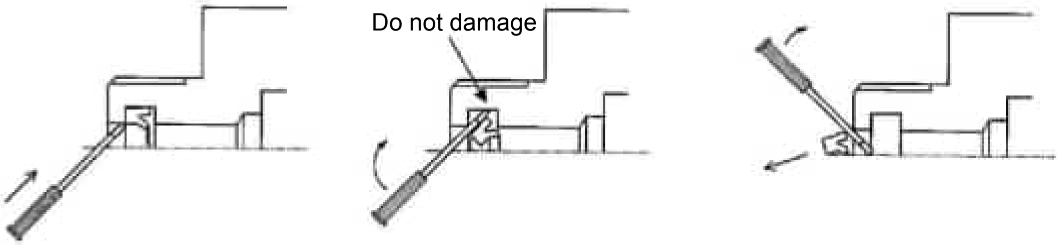
1. **Use a suitable pair of pliers to remove the ring, cover the rod air port with a finger, and pull out the piston rod**
   The packing cover and rod packing are removed.
2. **Be sure to apply sufficient grease to the rod packing interior and outer edge. Also fill the groove with grease as well.**
3. **Fit the rod packing, being careful it is facing the correct direction. Slowly insert the rod packing while gently rotating it. Fit the packing cover and ring.**

Packing Removal

Please disassemble and reassemble the cylinder in a clean location. In addition, please remove any external dirt. Please be especially careful of the piston rod surface and collar.

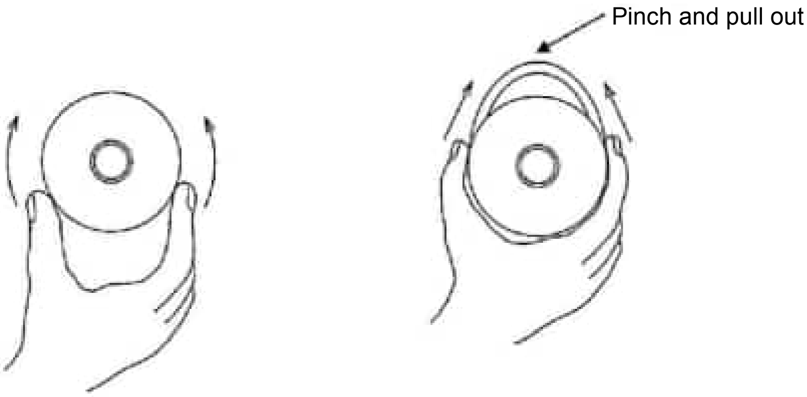
1. **Insert a precision screwdriver or other tool to remove the packing from the front surface of the body.**

   * Please be careful not to damage the body packing groove.



2. **Squeeze the edges of the piston packing in the same direction, and then pull out the raised area.**

   * The piston packing groove is deep, so use your hand rather than a precision screwdriver.



3. **Squeeze with your hand and then pull out the raised area.**

Grease Application

- **Rod Packing**

Thinly and evenly apply to the outer edge of the replacement packing. Also fill the groove with grease as well.

- **Piston packing**

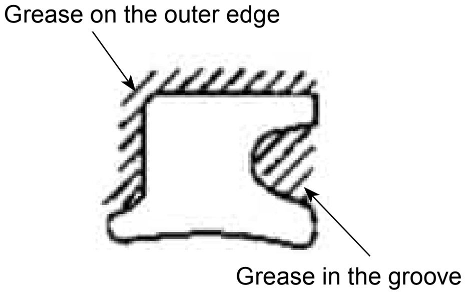
Apply thinly and evenly to the interior and outer edge.

- **Tube gasket**

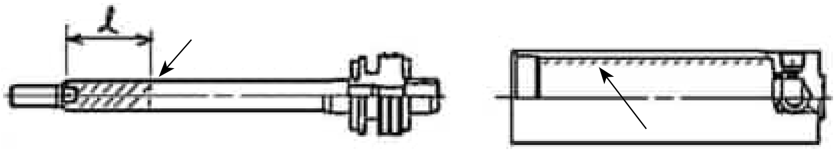
Apply thinly.

- **Cylinder parts**

Apply grease to all of the sliding parts of the cylinder.



ℓ = stroke × $\frac{1}{2}$

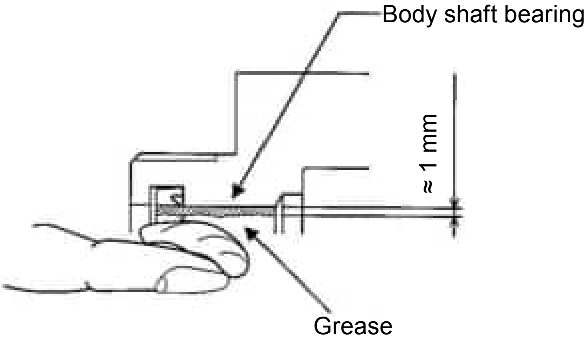


Packing Attachment

1. **Be careful to orient the direction of the packing correctly when fitting it.**

2. **Apply grease to all the inner edges of the packing and the body shaft bearing, as shown in the diagram.**

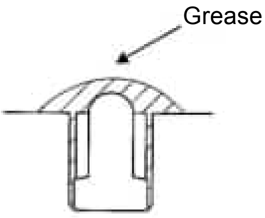
   * If the cylinder has a small bore, use a precision screwdriver or another tool to apply the grease.



3. **Fit the piston packing so that it does not get twisted.**

4. **Apply the grease to the piston packing groove and the outer edge as shown in the diagram.**

5. **Be careful not to drop the tube gasket while fitting it.**



Assembly Check

1. **When inserting the piston or collar into the body, insert them slowly and gently to avoid damaging the packing.**
2. **When you have finished assembling the cylinder, manually move the parts to ensure their smooth operation. In addition, ensure that the packing is not damaged by checking for leaks.**

Packing Storage Method (Long-term storage)

Seal the packing for storage, and store it as-is.

* Store the packing in a cool, dry place away from direct sunlight. In particular, please keep the packing separated and secluded from machinery which can readily emit heat, radiation or ozone.

* Please be careful not to deform or damage the packing by stacking large quantities of packing, or placing heavy objects on top of it.

* While rubber products are being stored, white powder may appear on the surface. This does not affect the performance of the packing.

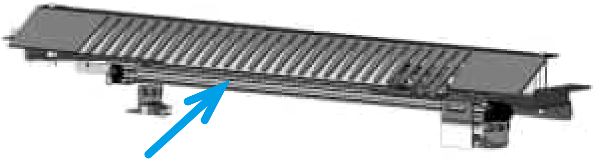
* Source
This chapter is taken from the following SMC user manuals:
A: No.CJP-OM0001K-A
B: No.CG1*-OM0005N
C: No.CM2*-OM0007C-A

2-3 Packing of the Rodless Air Cylinder Replacement

Check the operation of the cylinder at regular intervals, and replace the packing if any of the following occur:

- The cylinder does not operate smoothly
- There is a change in piston speed or cycle time
- There is an irregularity in the stroke

Locations of Cylinders with Replaceable Packing

Cylinder	Location used
D	Vibrating feeder exit cutter (Bobbin Tray specification only) 

Grease

Grease specifications	Grease product name
Mineral oil-base lithium extreme pressure grease NLGL No.1,No.2	Cosmo Oil: Cosmo Grease Dynamax Idemitsu: Daphne Eponex Grease Shell: Alvania EP grease

* Please avoid mixing different grades of grease, even if they are from the same brand.

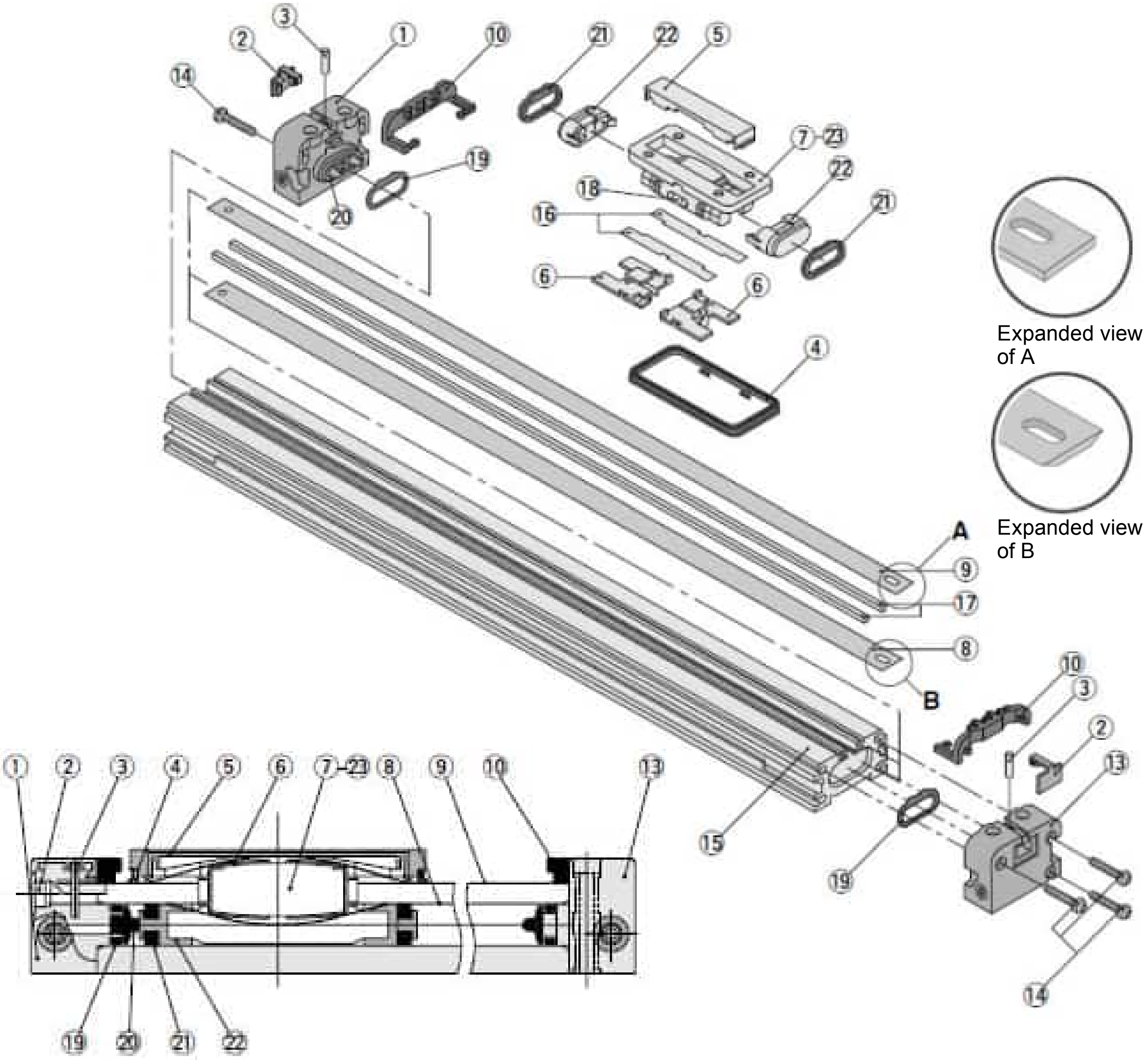
* For details of what is required when applying the grease, please refer to the instructions of the brand and grade of grease.

CAUTION

Using any type of grease other than those specified, or using a liquid lubricant agent, will degrade the rubber that forms the material of the packing, even if the lubricant temporarily offers lubrication properties. In addition, using such lubricants may also shorten the operating life of the cylinder itself.

Structual Drawing

- **Cylinder (21G-747-001)**



Expanded view of A

Expanded view of B

[Names of each parts]

No.	Name	No.	Name
(1)	End cap R	(14)	Button bolt with hex-head hole
(2)	Cap cover	(15)	Cylinder barrel
(3)	Tape stop pin	(16)	Shim
(4)	Scraper	(17)	Magnet strip
(5)	Mount cover	(18)	Magnet
(6)	Tape guide	(19)	Cylinder gasket
(7)	Piston yoke	(20)	Piston bumper
(8)	Inner sealing tape	(21)	Piston Packing
(9)	Outer sealing tape	(22)	Piston
(10)	Mount bumper	(23)	Inner tape guide
(13)	End cap L		

* (18), (20), and (23) are bonded on and cannot be disassembled.

* Replacement packing includes the following packings.

Scraper (4)	1 pc
Mount cover (5)	1 pc
Tape guide (6)	2 pcs
Cylinder gasket (19)	2 pcs
Piston Packing (21)	1 pc

Replacement Procedure

For replacement of parts using the packing set (21G-747-100), follow the disassembly and assembly steps shown below.
Please disassemble and reassemble the cylinder in a clean location. In addition, please remove any external dirt.

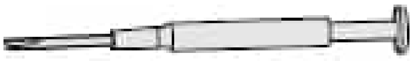
WARNING

- **Always completely shut off the supply of air, and confirm that pressure inside the product, and piping connecting the product, is at zero before operations.**
- **After assembly, always confirm that parts are assembled and screws tightened before supplying air to the product.**
- **As the parts include items with sharp angles and edges, be careful to avoid physical injuries. In addition, use protective gloves and protective glasses where necessary to ensure safety. Be particularly careful with the inner sealing tape, which has sharp edges along the side.**

CAUTION

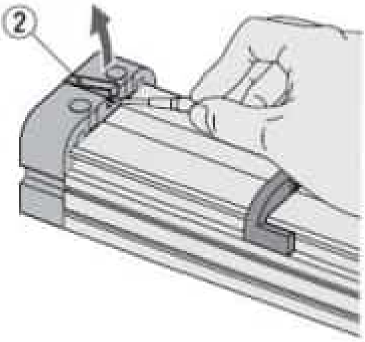
Avoid leaving scratches or dents in the inner sealing tape and outer sealing tape.
They could result in air leaks.

- **Tools used**

Hexagonal bar wrench	
Small screwdriver	
Radio pincers or tweezers	
Plastic sheet	**CAUTION** Contacting the side surface edge of the inner sealing tape with hard materials (metals, concrete, etc.) can deform it, resulting in air leakages. During disassembly and assembly, cover the inner sealing tape with plastic sheet in places where it looks most likely to be contacted.

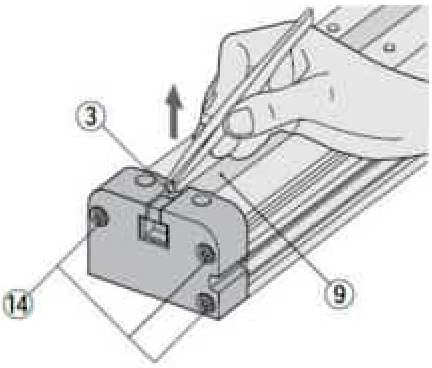
- **Disassembly steps**

1. **Insert the small screwdriver into the grip on the cylinder barrel side, rotate the cap cover (2), and remove.**

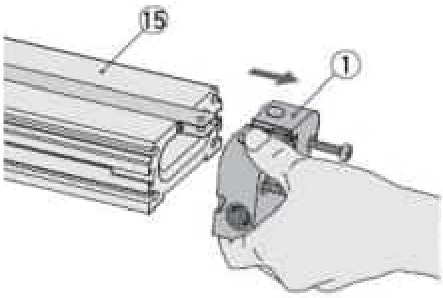


2. **Use the radio pincer or tweezer to grab and pull out the pin (3) fixing the inner sealing tape (8) and outer sealing tape (9) in place.**

3. **Remove the three bolts (14) used to tighten the end cap.**

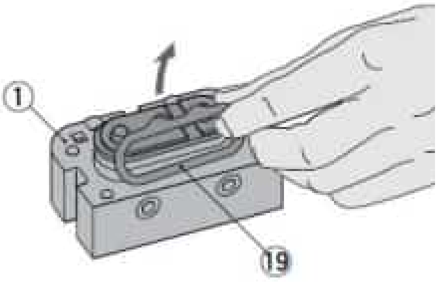


4. **Remove the end cap (1 [13]) from the cylinder barrel (15).**



5. **Remove the cylinder gasket (19) from the end cap.**

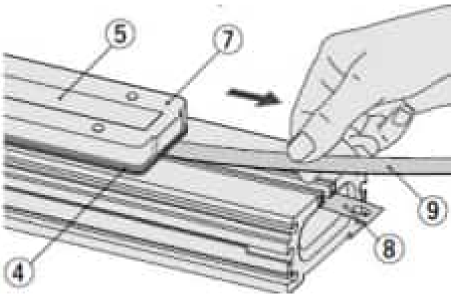
6. **Use the same steps to remove the cylinder gasket on the other end cap.**



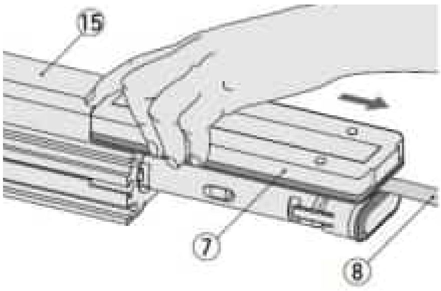
7. **Remove the outer sealing tape (9) from between the piston yoke (7), mount cover (5), and scraper (4).**

WARNING

As the inner sealing tape has sharp edges along the side, take care to avoid physical injuries.



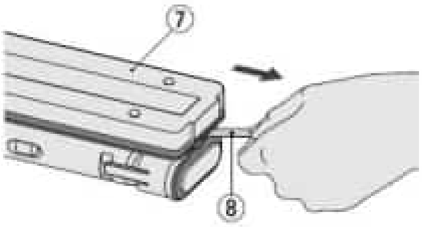
8. **Slide the piston yoke (7), and remove it from the cylinder barrel (15). At the same time, remove the inner sealing tape (8) from the cylinder barrel.**



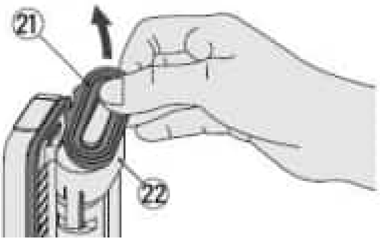
9. **Remove the inner sealing tape from between the piston yoke and tape guide.**

WARNING

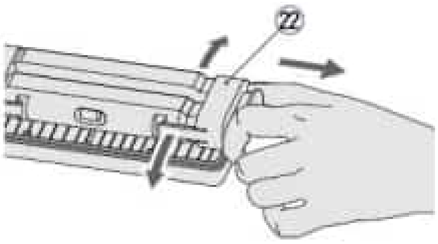
As the inner sealing tape has sharp edges along the side, take care to avoid physical injuries.



10. **Remove the piston seal (21) from the piston (22).**

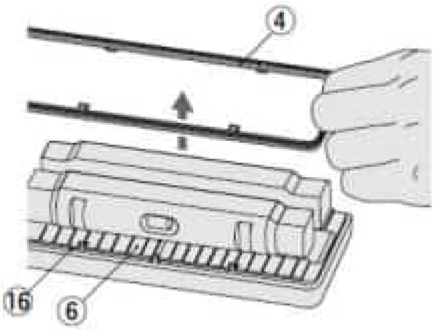


11. **Spread the grips on the piston, and remove it.**



12. **Remove the tape guide (6), shim (16), and scraper (4).**

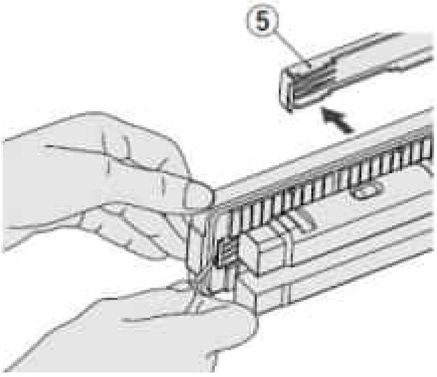
* The tape guide cannot be removed until the piston is pulled out.



13. **Use a screwdriver, etc., to push up on grips of the mount cover (5), and remove it.**

- **Remark**

When removing the mount cover only, for replacement of the outer sealing tape, etc., it can be removed by inserting a small screwdriver, etc. into the center of the scraper to control the grip.

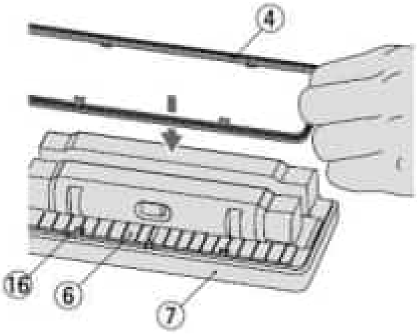


- **Assembly steps**

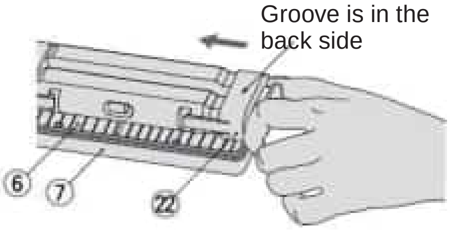
CAUTION

Avoid leaving scratches or dents in the inner sealing tape and outer sealing tape. They could result in air leaks.

1. **Assemble the tape guide (6), shim (16), and scraper (4) to the piston yoke (7).**



2. **Assemble the piston (22) to the piston yoke, with the groove taking the inner sealing tape (8) facing in the direction of the tape guide side.**

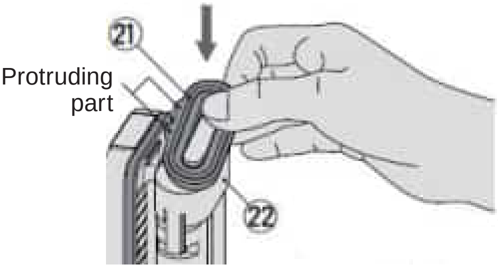


3. **Position the protruding side of the piston sealing (21) so that it faces upward (inner sealing tape side) and the open side of the lip so that it faces outward, and assemble it to the piston.**

   * Apply a plenty of grease to the area.

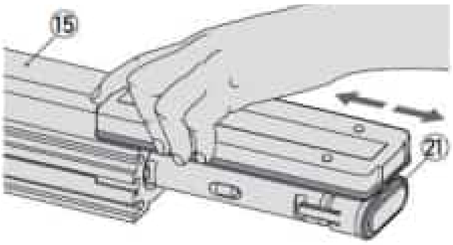
CAUTION

The protruding part has been exaggerated in the illustration for easy understanding. Watch carefully, however, since it actually protrudes by just a very small amount.



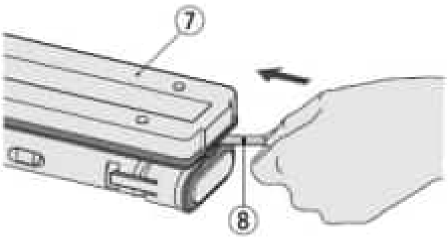
4. **With the piston sealing mounted and grease applied, insert into the cylinder (15) barrel. Apply grease to inside of the cylinder barrel while moving it two or three times across its full stroke.**

   * Apply plenty of grease to the rubbed portions of the piston yoke and the piston yoke's sealing tape.



5. **Pass the inner sealing tape (8) between the piston yoke (7) and tape guide (6), and assemble.**

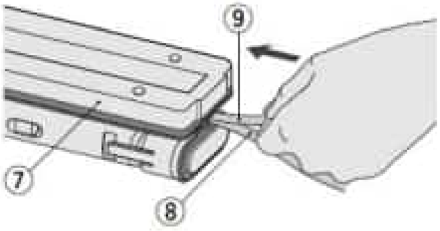
   * At this time, mount so that the surface chamfering side of the faces toward the inner side of the cylinder barrel (15).



WARNING

As the inner sealing tape has sharp edges along the side, take care to avoid physical injuries.

6. **Ensure that the hole shapes of the outer sealing tape (9) are oriented in the same way as the round hole and long hole of the inner sealing tape (8), pass it between the piston yoke and tape guide, and assemble.**



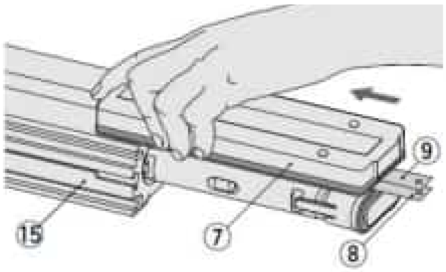
WARNING

As the inner sealing tape has sharp edges along the side, take care to avoid physical injuries.

7. **Apply grease to the bottom surface of the tape guide and to the bottom surface groove of the scraper.**

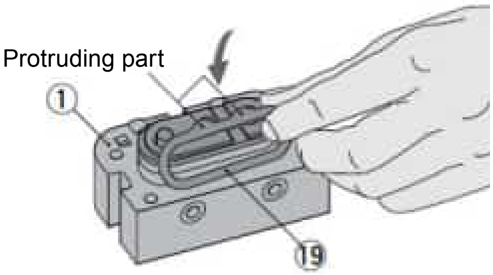
8. **Insert the piston yoke (7) into the inner side of the cylinder barrel (15) so that the inner sealing tape (8) is on the inside of the (15) and the (9) is on the outside of the (15).**

   * When inserting the (7), press lightly on the tape guide from underneath to ensure that it does not get hung up on corners in the (15).



9. **Assemble the cylinder gasket (19) to the end cap (1 [13]).**

   * At this time, leave the protruding side of the (19) facing upward, and bring the protrusion toward the center. Moreover, always apply grease to the (19).



CAUTION

The protruding part has been exaggerated in the illustration for easy understanding. Watch carefully, however, since it actually protrudes by just a very small amount.

10. **Align the holes of the inner sealing tape (8) and outer sealing tape (9), and ensure that their outward dimensions are evenly set left and right in regards to the cylinder barrel (15).**

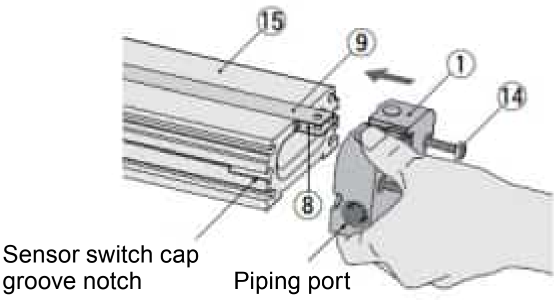
11. **Insert the end cap (1 [13]) into the cylinder barrel, tighten the end cap, and loosely tighten the three button bolts (14) with hex-head holes (on both sides).**

    * Avoid using an impact wrench to strongly tighten the screws from the start. Since the (14) are tapping screws, tightening the end cap and the bolts too soon could damage the threads.

12. **Place the unit on a table as assembled to Step 11, then, while pushing down from above on the end cap, tighten the end cap to the cylinder barrel, and tighten the three bolts (14) (both sides).**

    * Confirm that the piping connection port and the notch on the sensor switch cap groove are facing in the same direction.

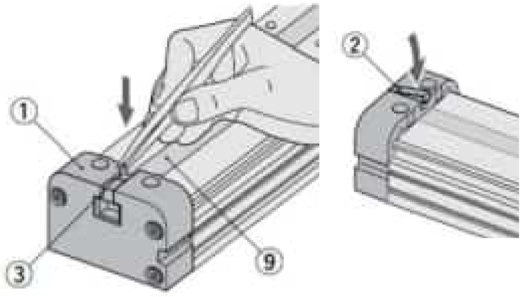
    * The tightening torque for bolts should be 1.1 N•m.



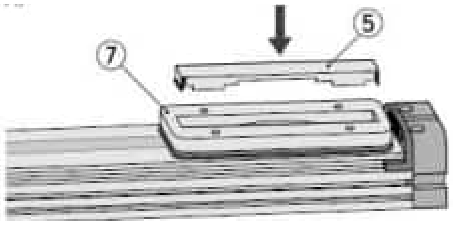
13. **Insert the pin (3) into the round-shaped holes of the inner sealing tape and outer sealing tape.**

14. **Use a small hexagonal bar wrench or pincer, etc., to pull on the inner sealing tape from the gap on the opposite side of the end cap's end surface, to take out the slack in the inner sealing tape. Do not pull on it with too much force at this time. Insert the pin into the long hole side. Assemble the cap cover (2).**

    * Do not pull with excessive force when taking out the slack.



15. **Push down on the mount cover (5) from above the piston yoke (7), and assemble.**



16. **When you have finished assembly, move the parts manually to ensure that they move smoothly. In addition, check for leaks to ensure that the packing is not damaged.**

Packing Storage Method (Long-term storage)

Refer to Chapter 8B, 2-2.

* Source
This chapter is taken from the KOGANEI user manuals.

Sec 3 Oil Reference Table

Oiling spot	Lubricant manufacturer					
	Shell	**Idemitsu**	**NIPPON OIL**	**Cosmo**	**Mobil**	**Viscosity/ Grade**
Hoist Hydraulic Pump	- Tellus - Vitrea - Tetra	- Hydro - Super Hydro	Super Highland	Cosmo Hydro	- DTE - Hydraulic	ISO VGa32

Sec 4 Periodic Maintenance of Parts

A constant voltage power supply is comprised of many parts. Some of these component parts require maintenance depending upon the conditions of use. For a constant voltage power supply to function properly for a long period of time, it is necessary to replace those parts after their service life.
When to replace the parts differs depending upon the installation environment and operating conditions of constant voltage power supplies. The maintenance periods of constant voltage power supplies are listed below to be used as a reference for periodic maintenance.

Element name	Device No.	Normal Life Cycle*	Countermeasure
Constant voltage power supply inside the CBF control box	PU201	4 years	Replace with new part
Constant voltage power supply inside the PF control box	PU301	7 years	Replace with new part

* Normal operating conditions are as follows:

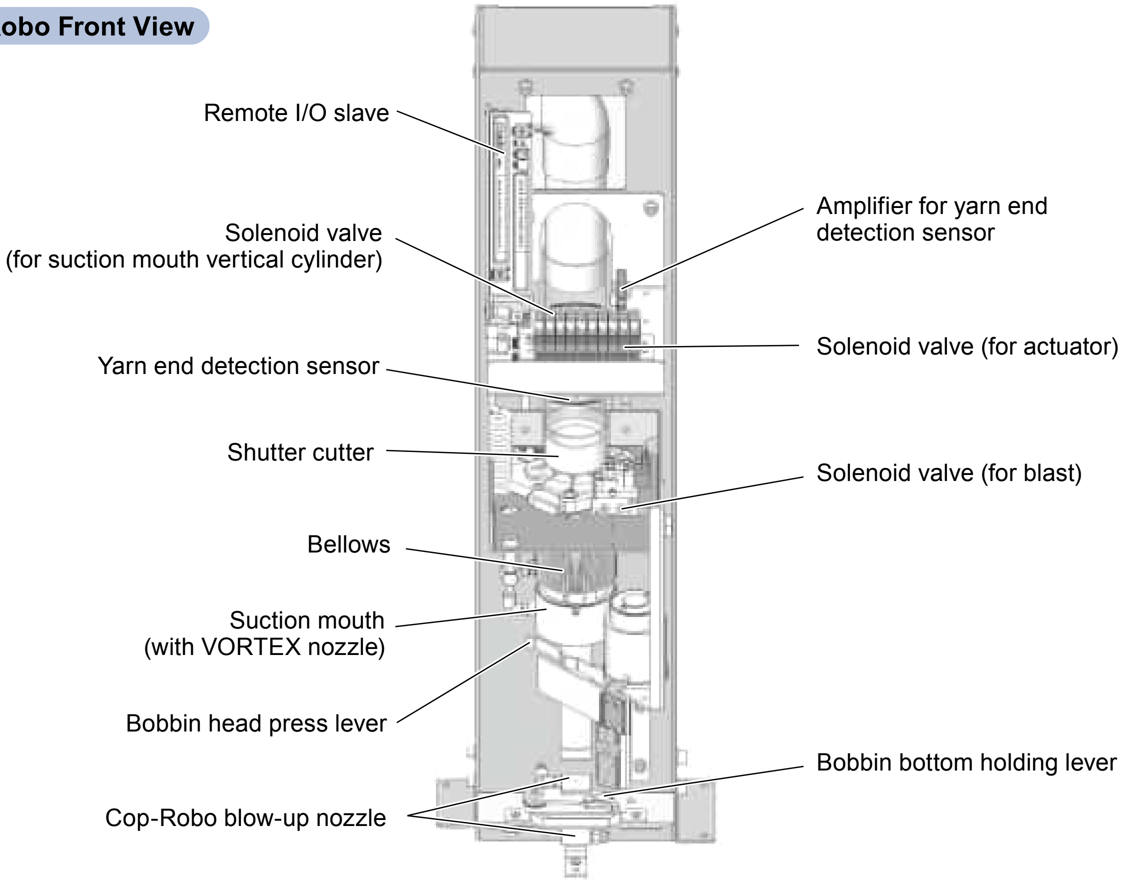
Annual average ambient temperature	40°C
Maximum load factor	50 %
Maximum daily operation	12 hours

Sec 1 External View & Names of Each Part

This device is called a yarn end finder. It finds the end of the yarn on a spinning bobbin and inserts it into the top hole of the bobbin.
If the yarn end on the spinning bobbin is not found on the first attempt, the operation is repeated (the number of attempts can be set between 3 and 5).
In addition, the yarn end find operation is also possible on half cops (partial bobbins).

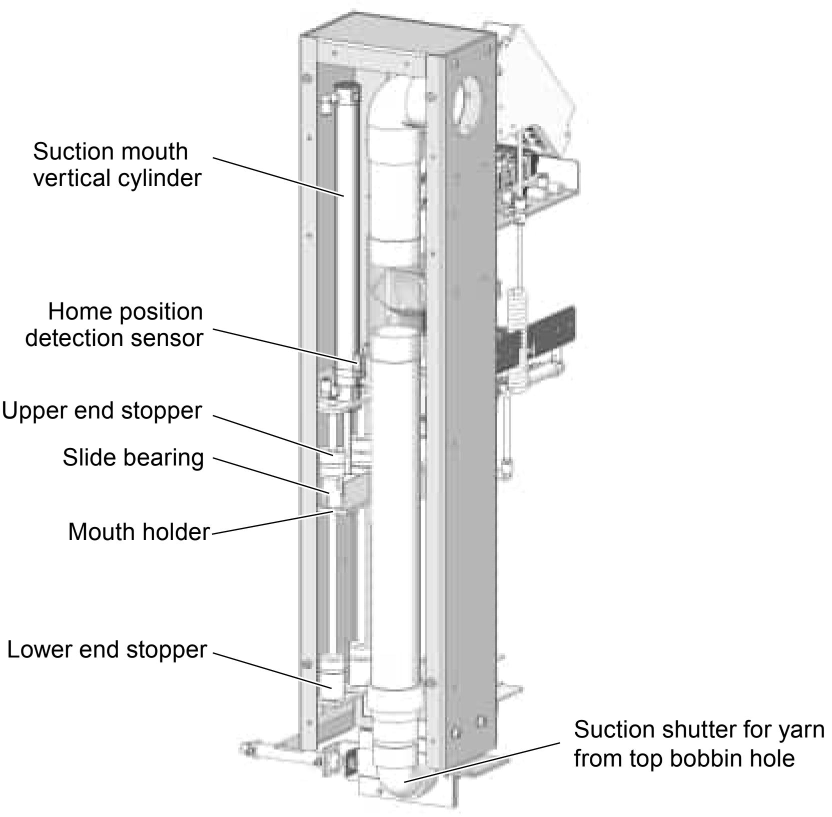
1-1 Cop-Robo

Cop-Robo Front View


Remote I/O slave
Solenoid valve (for suction mouth vertical cylinder)
Yarn end detection sensor
Shutter cutter
Bellows
Suction mouth (with VORTEX nozzle)
Bobbin head press lever
Cop-Robo blow-up nozzle
Amplifier for yarn end detection sensor
Solenoid valve (for actuator)
Solenoid valve (for blast)
Bobbin bottom holding lever

* Refer to Chapter 8C, 1-2 for a detailed layout of the solenoid valves for the actuator and the blast operation.

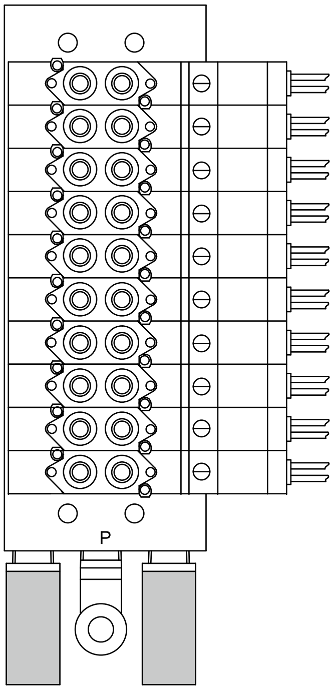
Cop-Robo Rear View


Suction mouth vertical cylinder
Home position detection sensor
Upper end stopper
Slide bearing
Mouth holder
Lower end stopper
Suction shutter for yarn from top bobbin hole

1-2 Air Valve

Layout of Solenoid Valves for Actuator

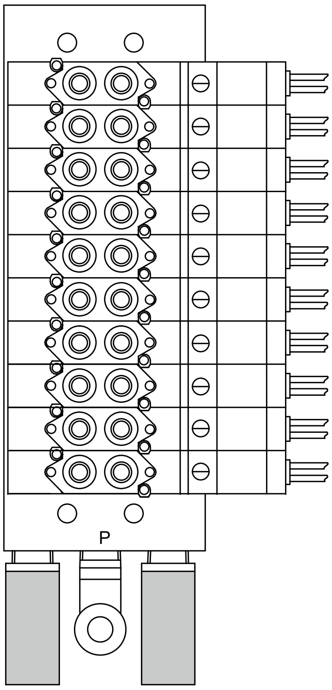
- **Link Coner type**



Cop-Robo x 1	Cop-Robo x 2	
	Machine front	Machine rear
Lever for rotary cutter tray rotation *b		
Lever for searcher tray rotation		
Searcher stopper		
Searcher		
Shutter cutter		
Bobbin bottom holding lever		
Suction shutter for yarn from top bobbin hole		
Yarn end finder miss bobbin separator		
CBF exit lever	Lead tray stopper on return conveyor bypass	CBF exit lever
Beater *a		

*a, *b is present on some specifications.

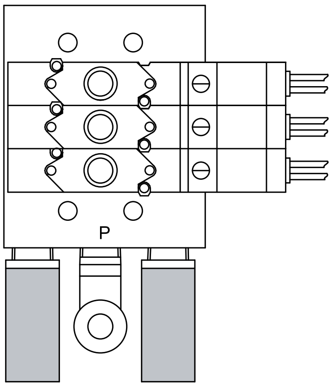
- **Bobbin Tray type**



Cop-Robo x 1	1 yarn type: Cop-Robo x 2		2 yarn type: Cop-Robo x 2	
	Machine front	Machine rear	Machine front	Machine rear
Lever for rotary cutter tray rotation *b				
Lever for searcher tray rotation				
Searcher stopper				
Searcher				
Shutter cutter				
Bobbin bottom holding lever				
Suction shutter for yarn from top bobbin hole				
Yarn end finder miss bobbin separator				
CBF exit lever		YEF1/YEF2 separator	CBF exit lever	Beater *a
Beater *a				

*a, *b is present on some specifications.

Layout of Solenoid Valves for Blast



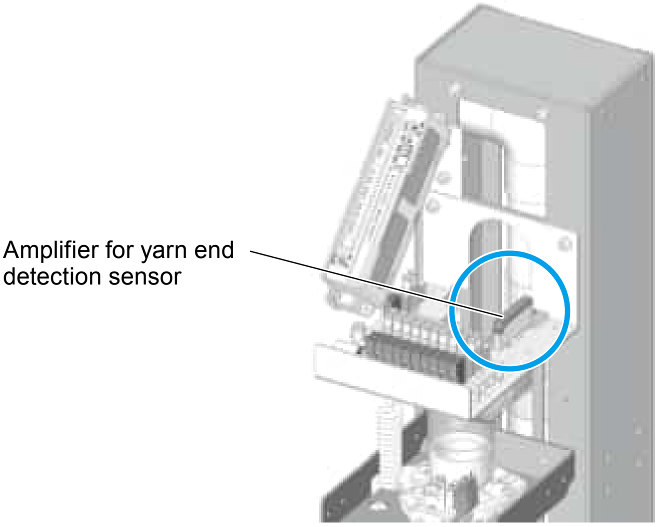
Link Coner	Bobbin Tray			
Cop-Robo x 1	1 yarn type: Cop-Robo x 2		2 yarn type: Cop-Robo x 2	
	Machine front	Machine rear	Machine front	Machine rear
Lever blast for spandex *a				
Vortex nozzle				
Cop-Robo blow up nozzle				

*a is present on the spandex specifications.

Sec 2 Adjustment Standard

2-1 Settings for Yarn End Detection Sensor

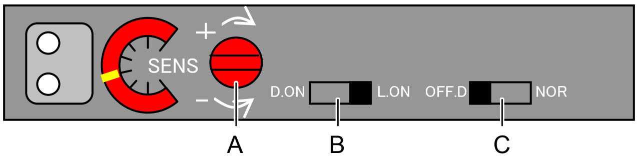
When the yarn end find operation is completed, the yarn end detection sensor determines if the operation was successful.
If the yarn end is detected, the bobbin is sent off. If the yarn end is not detected, the operation is repeated on that bobbin (the number of attempts can be set between 3 and 5).


Amplifier for yarn end detection sensor

Setting Each Switch

Sensitivity adjustment dial (A)	Set the sensitivity level to the 3/8 position
Light ON/Dark ON selector switch (B)	Turn the light ON (L.ON)
Timer switch (C)	Set the timer switch to OFF Delay (OFF.D)

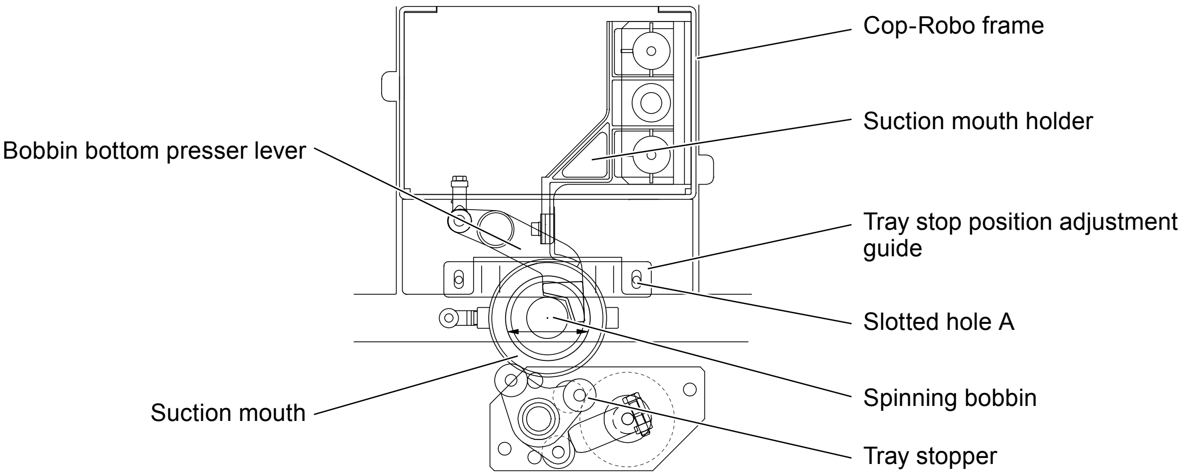
* Some on-site adjustments may be needed depending on types of colored yarns and cotton counts.


SENS
+
−
D.ON
L.ON
OFF.D
NOR
A
B
C

2-2 Centering Tray Stop Position & Suction Pipe

Centering Tray Stop Position

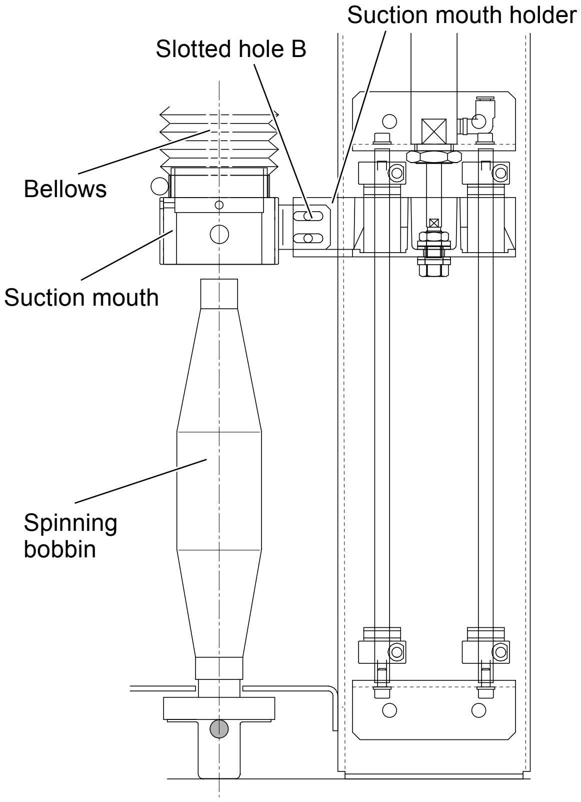
To adjust the tray stop position, move the guide forward or backwards in the slotted hole A. Adjust the guide so that the tray stop position falls in the center of the suction mouth.


Cop-Robo frame
Suction mouth holder
Bobbin bottom presser lever
Tray stop position adjustment guide
Slotted hole A
Spinning bobbin
Suction mouth
Tray stopper

Centering Suction Pipe

1. **Center the suction pipe using the slotted hole B on the mounting section of the suction mouth.**

2. **Adjust it so that the center of the suction mouth is aligned with the center of the spinning bobbin.**

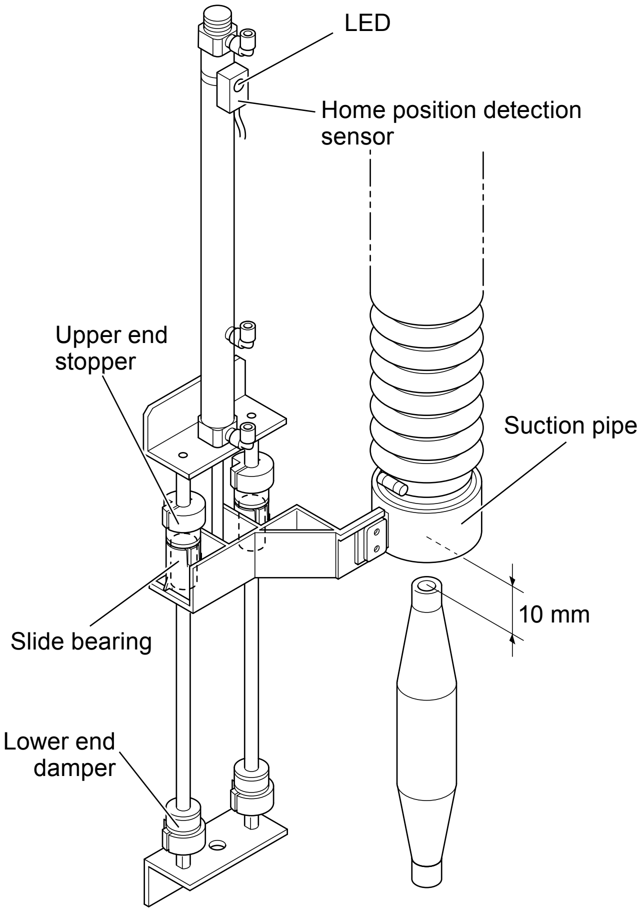

Suction mouth holder
Slotted hole B
Bellows
Suction mouth
Spinning bobbin

2-3 Positioning the Upper End of the Suction Pipe

1. **Fix the upper end stopper in a position such that the gap between the bobbin and the suction pipe is 10 mm.**

   The position at which the upper end stopper is fixed will be the home position for the cylinder.

2. **While the cylinder is in its home position, adjust the sensor position so that the LED for the home detection sensor will turn ON.**

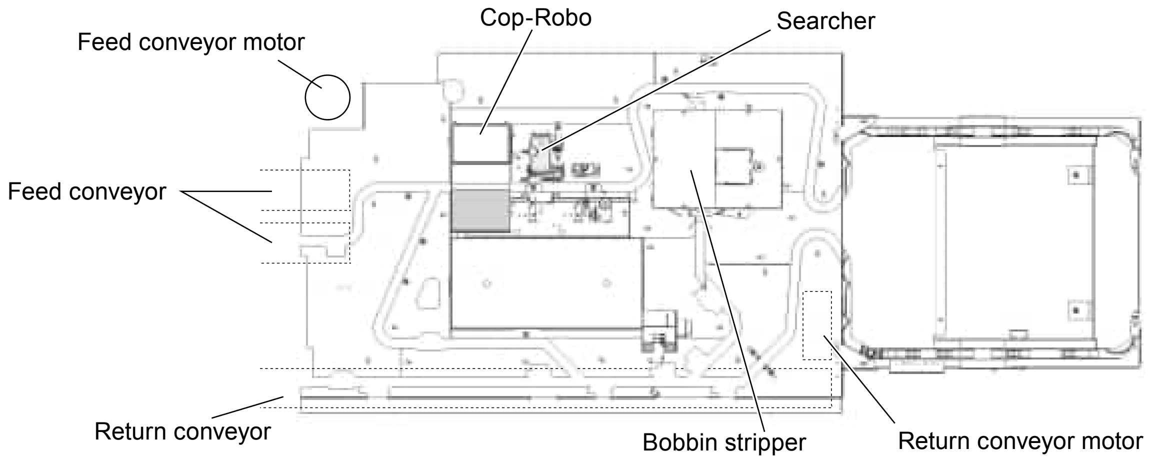

LED
Home position detection sensor
Upper end stopper
Suction pipe
10 mm
Slide bearing
Lower end damper

Chapter

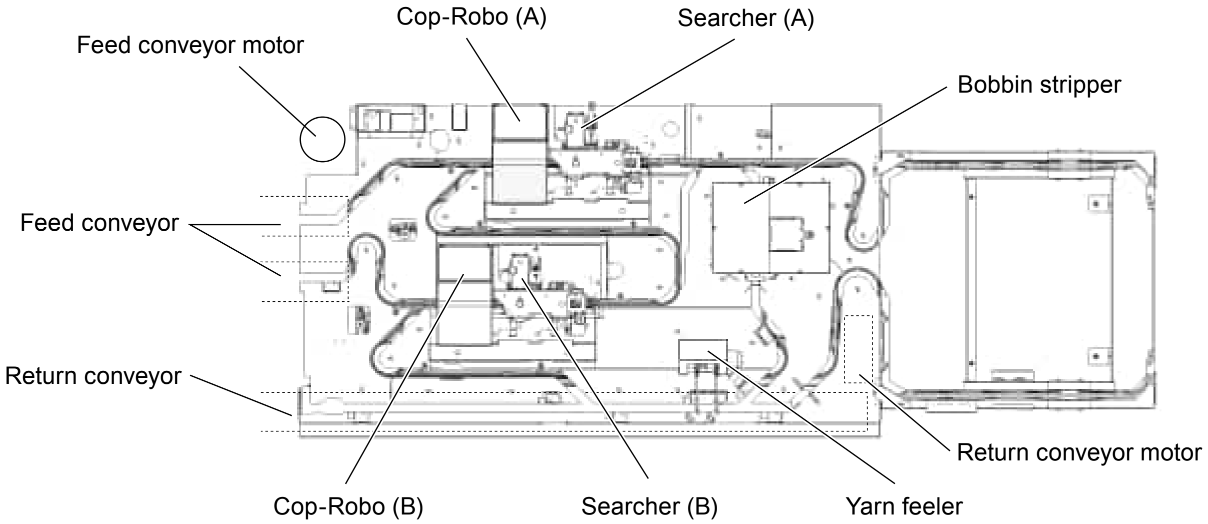
8D Tray Conveyor

Sec 1 Layouts

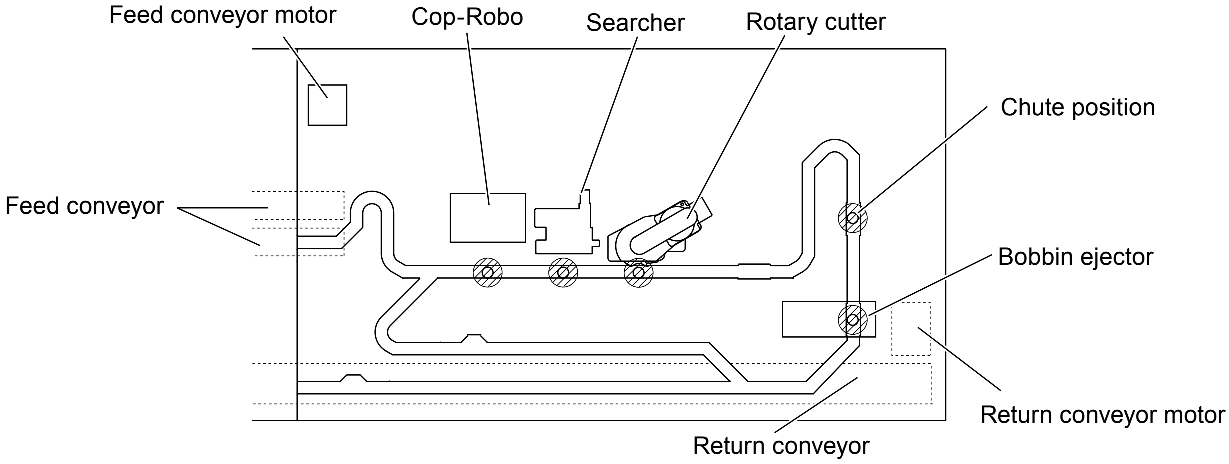
Link Coner Type


Cop-Robo
Searcher
Feed conveyor motor
Feed conveyor
Return conveyor
Bobbin stripper
Return conveyor motor

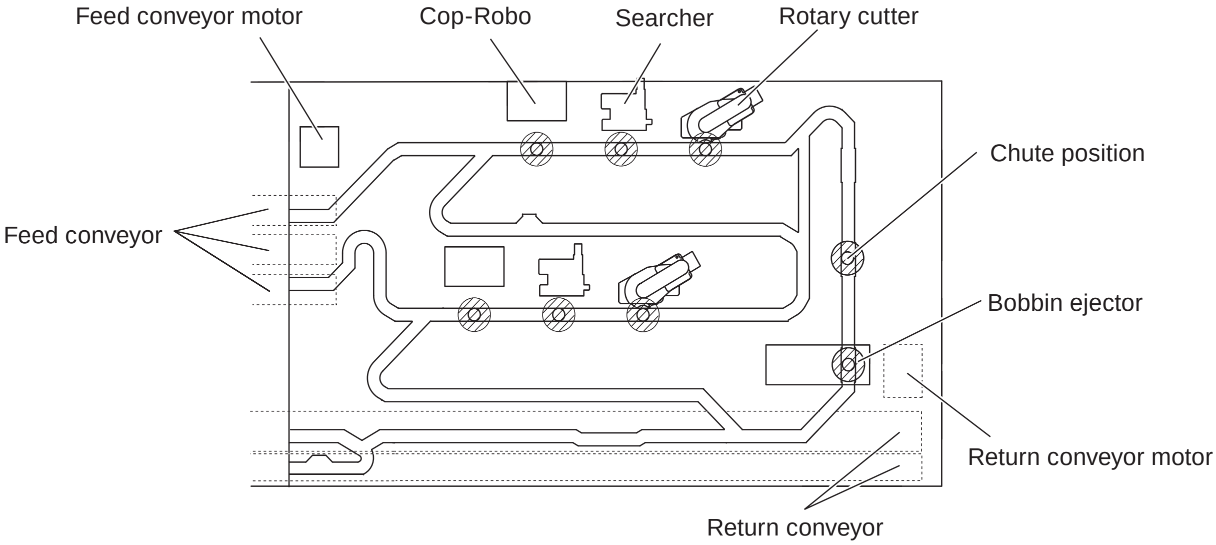
Link Coner Type (Cop-Robo x 2)


Cop-Robo (A)
Searcher (A)
Feed conveyor motor
Bobbin stripper
Feed conveyor
Return conveyor
Return conveyor motor
Cop-Robo (B)
Searcher (B)
Yarn feeler

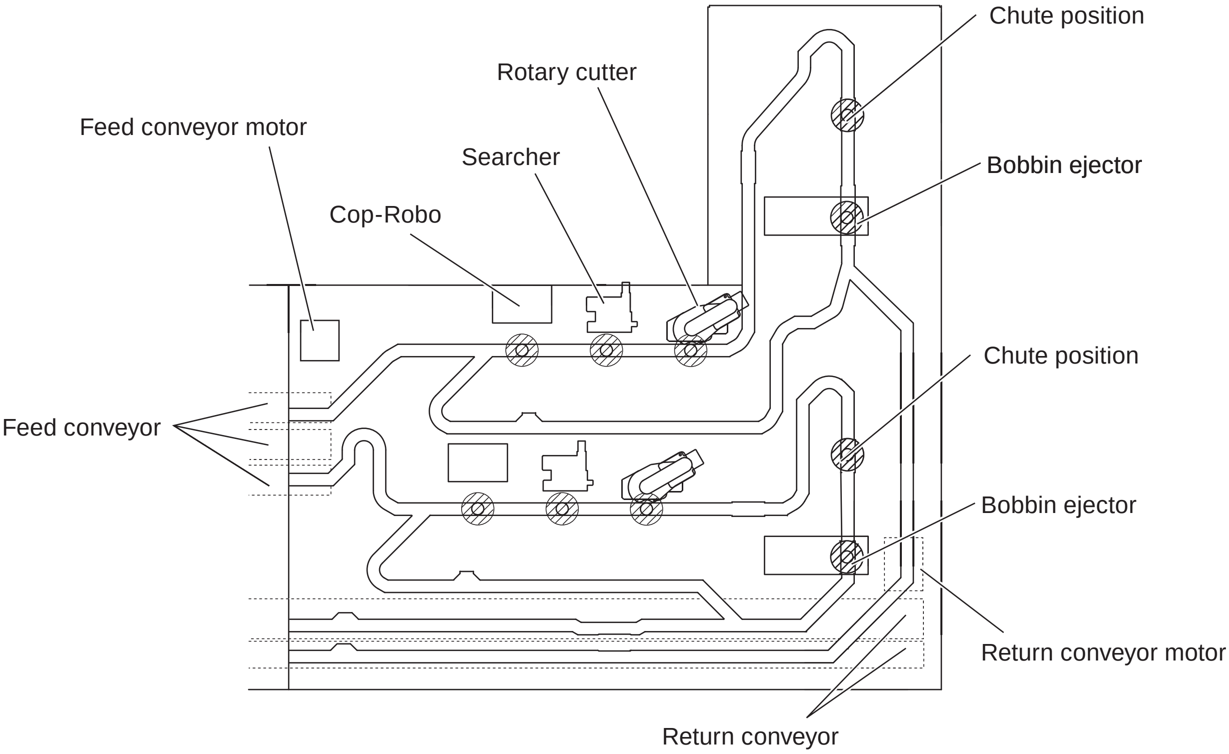
Bobbin Tray Type (1 yarn type: Cop-Robo x 1)


Feed conveyor motor
Cop-Robo
Searcher
Rotary cutter
Chute position
Feed conveyor
Bobbin ejector
Return conveyor motor
Return conveyor

Bobbin Tray Type (1 yarn type: Cop-Robo x 2)


Feed conveyor motor
Cop-Robo
Searcher
Rotary cutter
Chute position
Feed conveyor
Bobbin ejector
Return conveyor motor
Return conveyor

Bobbin Tray Type (2 yarn type: Cop-Robo x 2)


Chute position
Rotary cutter
Feed conveyor motor
Searcher
Bobbin ejector
Cop-Robo
Chute position
Feed conveyor
Bobbin ejector
Return conveyor motor
Return conveyor

Sec 2 Electric Control

2-1 Feed Conveyor & Return Conveyor Control

Start

1. **Turn ON both the tray conveyor switch on the winder operation panel and the return conveyor drive switch on the CBF operation panel.**
2. **Press the start button on the winder operation panel.**
   Both the feed conveyor and the return conveyor will start rotating.

Stop

1. **Press the stop button on the winder operation panel.**
   Both the feed conveyor and the return conveyor will stop.

Emergency Stop

- **When the emergency stop switch is pressed**
- **When the tray conveyor switch on the winder operation panel is turned OFF**
- **When the thermal alarm is tripped**

* Both the feed conveyor and the return conveyor stop immediately.

- **When the return conveyor drive switch on the CBF operation panel is turned OFF**

* The return conveyor stops immediately.

When the Link Coner is “Waiting for Spinning-Bobbins”

The start and stop of the feed and return conveyors are affected by the status of the spinning frame

2-2 CBF Conveyor Control

2 Yarn Type: Cop-Robo x 2 Specification

With 2 yarn types, each yarn type has its own independent tray flow line.
So, even if 1 yarn type stops due to a malfunction, it is possible to continue production with the CBF conveyor for the other yarn type.

- **Start**

There is only one CBF start button, irrespective of the yarn types.
It is possible to restart the conveyor by pushing the CBF start button regardless if only one or both yarn types has stopped.

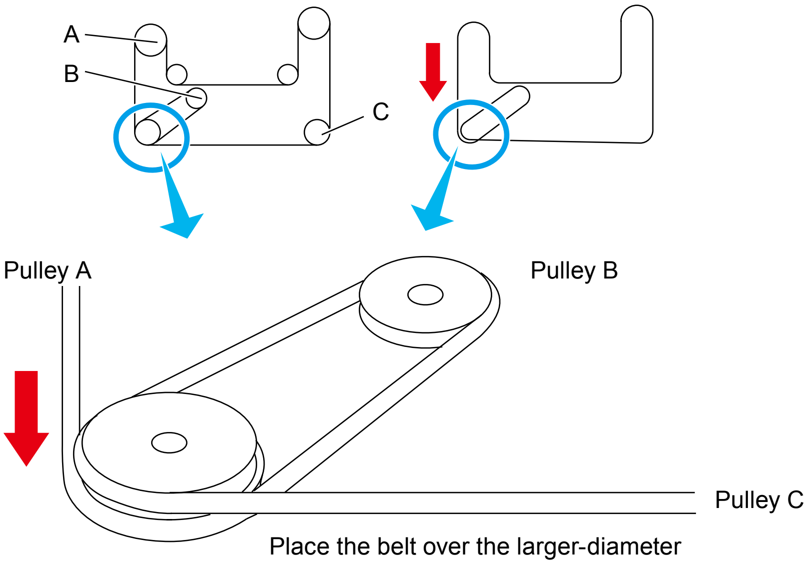
- **Stop**

If there is a CBF malfunction, only the CBF conveyor for the yarn type that has malfunctioned will stop.
As a result, the production of the yarn type that did not malfunction will continue.

Sec 3 Adjustment Standard

3-1 Conveyor Belts Settings

1. **Attach the belt from pulley A to the lower part of the 2 step pulley.**
2. **Attach the belt from pulley B to the upper part of the 2 step pulley.**
3. **Attach the belt from pulley A to pulley C.**

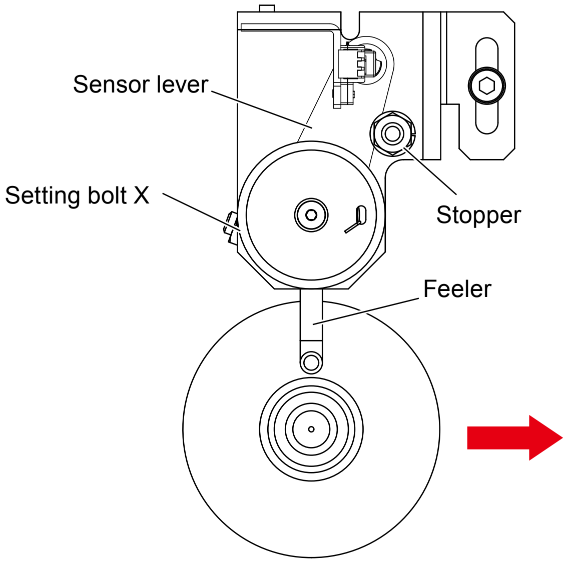

A
B
C
Pulley A
Pulley B
Pulley C

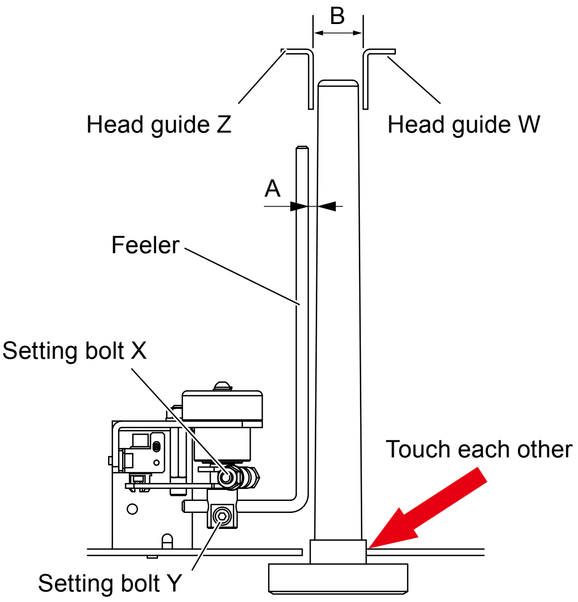
Place the belt over the larger-diameter portion of the double-stepped pulley

3-2 Full Bobbin Detection Feeler

* Detects a spinning bobbin with yarn that can be wound, except skinny bobbins.

1. **While the tray is touching the tray guide on the opposite side of the feeler, adjust clearance A (the clearance between the feeler and the empty bobbin) so that it is between 0 and 1 mm. Then, secure the feeler with setting bolt Y.**
2. **Fix head guide W so that it touches the empty bobbin.**
3. **Adjust and fix head guide Z so that clearance B equals the outer diameter of bobbin head plus 2 to 3 mm.**
4. **Rotate the sensor lever so that it touches the stopper, and fix it with setting bolt X.**

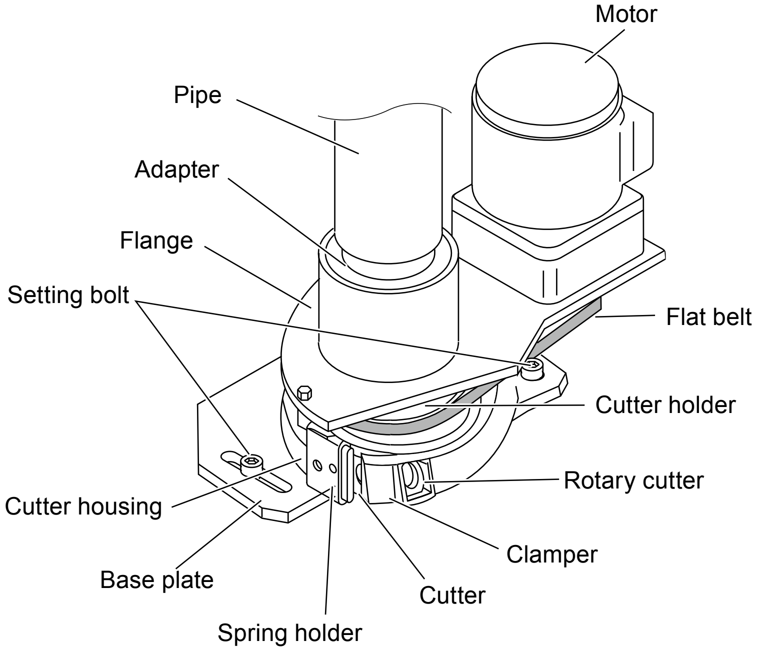

Sensor lever
Setting bolt X
Stopper
Feeler

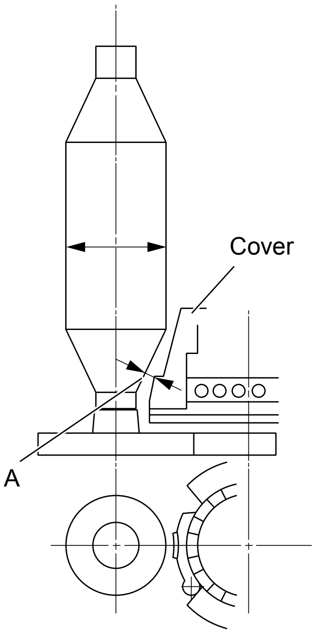

B
Head guide Z
Head guide W
A
Feeler
Setting bolt X
Touch each other
Setting bolt Y

3-3 Rotary cutter

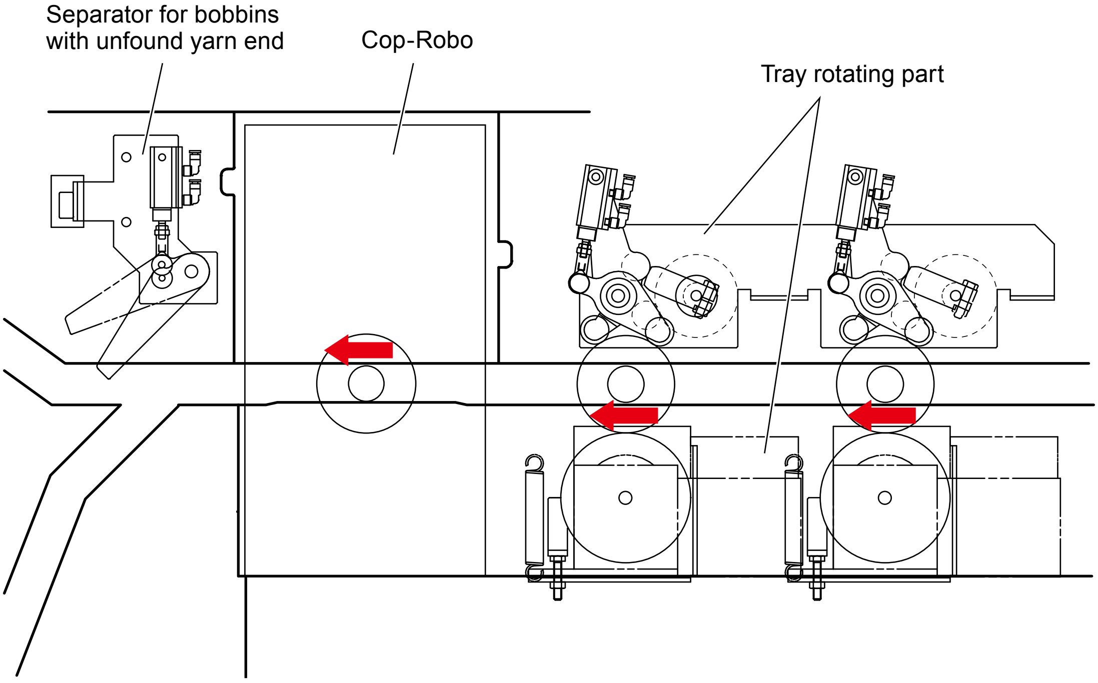
1. **Mount the rotary cutter and adjust clearance A (the clearance between the cutter's cover and the bobbin) so that it is between 1 to 2 mm.**

   * Align the bobbin center with that of the rotary cutter as shown below.


Motor
Pipe
Adapter
Flange
Setting bolt
Flat belt
Cutter holder
Rotary cutter
Cutter housing
Clamper
Base plate
Cutter
Spring holder


Rotary cutter position
Cover
A

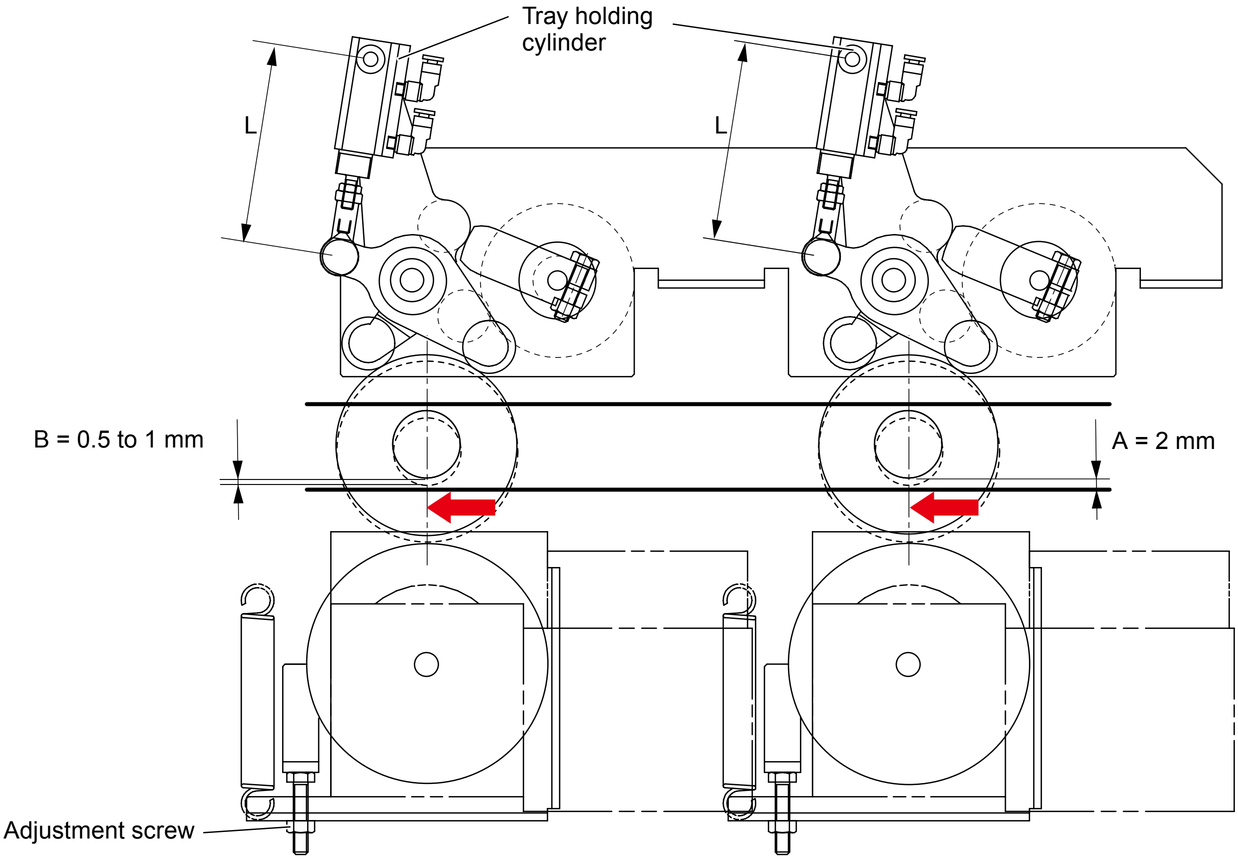
3-4 Tray Stopper & Guide


Separator for bobbins
with unfound yarn end
Cop-Robo
Tray rotating part

Tray Rotating Part

Normally, length L (between the tray retaining cylinder and the rod end) should be 83 mm when the cylinder is retracted.

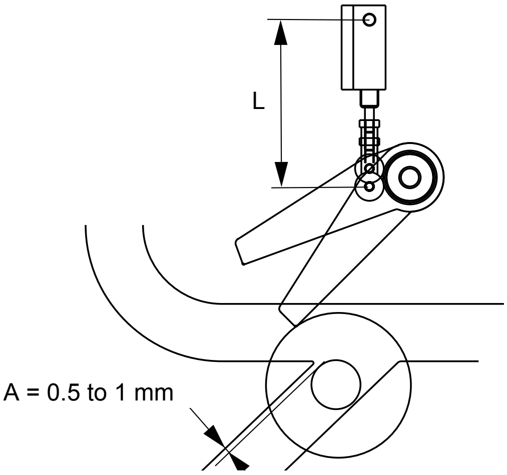
1. **Adjust the tray roller using the adjusting screw so that distance A (the distance between the tray roller's guide and the tray's pin) is 2 mm.**
2. **When the tray retaining cylinder is retracted, push in the tray between 0.5 to 1.0 mm, and adjust the length of the rod end.**



Bypass Lever for Bobbins with Unfound Yarn End

Normally, length L (between the bypass lever and the cylinder's rod end) should be 83 mm when the cylinder is retracted.

1. **While the cylinder is fully extended, adjust the rod end so that clearance A between the tray and the bypass guide is between 0.5 to 1 mm.**

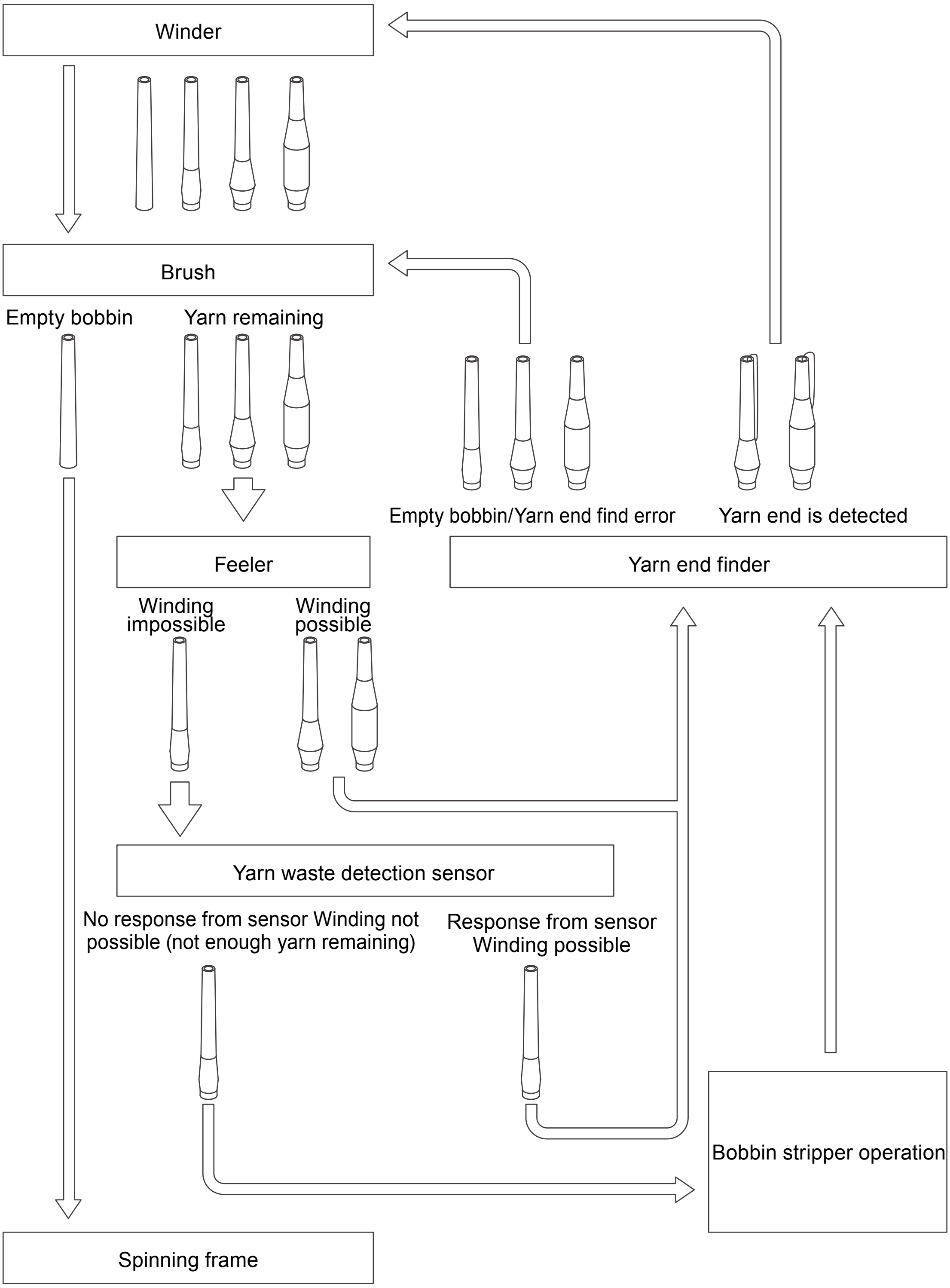


Chapter 8E Bobbin Stripper

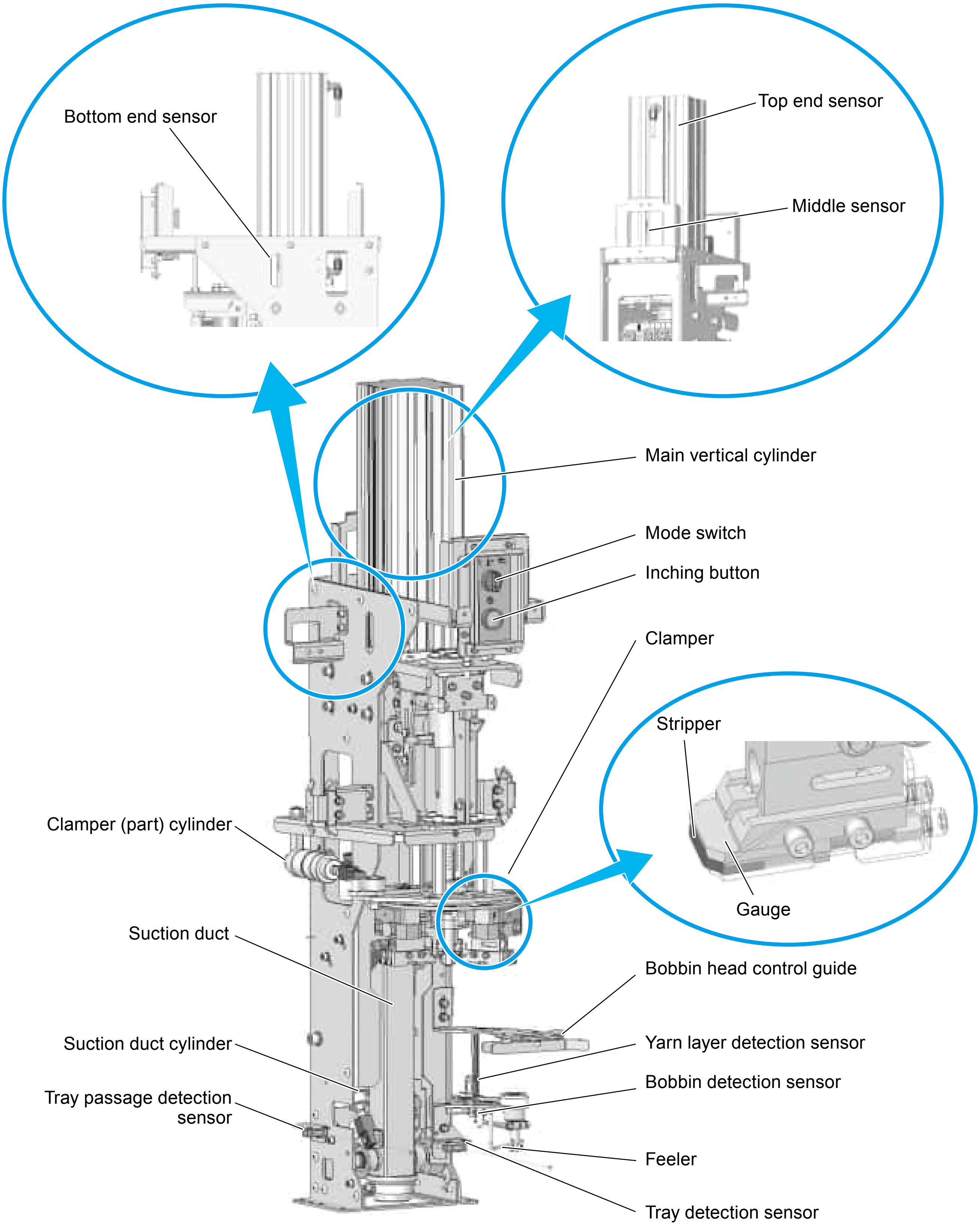
Sec 1 Function & Names of Each Part

When a bobbin being wound by the winder is returned with yarn still remaining on it for some reason, this device determines if the bobbin can still be wound or not. If winding is not possible, the device will remove any yarn remaining on the bobbin.

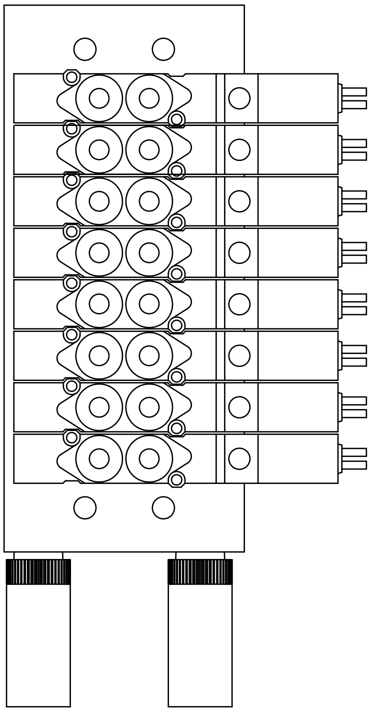
1-1 Stripper Operation Process


Winder
Brush
Empty bobbin
Yarn remaining
Empty bobbin/Yarn end find error
Yarn end is detected
Feeler
Yarn end finder
Winding impossible
Winding possible
Yarn waste detection sensor
No response from sensor Winding not possible (not enough yarn remaining)
Response from sensor Winding possible
Bobbin stripper operation
Spinning frame

1-2 External View


Bottom end sensor
Top end sensor
Middle sensor
Main vertical cylinder
Mode switch
Inching button
Clamper
Stripper
Gauge
Clamper (part) cylinder
Suction duct
Bobbin head control guide
Suction duct cylinder
Yarn layer detection sensor
Tray passage detection sensor
Bobbin detection sensor
Feeler
Tray detection sensor

1-3 Solenoid Valve (SV) Layouts



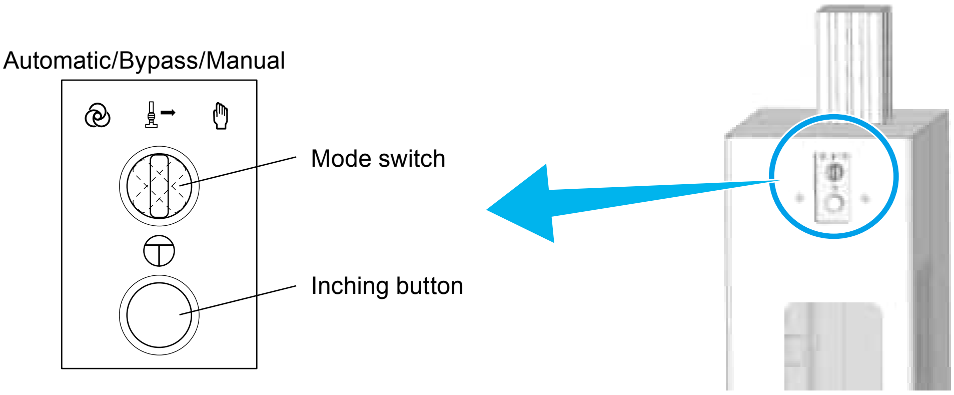
Tray separator
Blast
Cutter
Spare
Clamper
Shutter
Inspector conveyor , tray loading lever*
Inspector conveyor, tray feeding lever*

* Only for inspector specification

Sec 2 Operation Method

2-1 Operation Panel

The operation panel is located on the side of the bobbin stripper. On the operation panel, there is a mode switch and an inching button (for manual operation).



2-2 Description of Operation Modes

It is possible to choose one of the three operation modes by operating the mode switch on the operation panel: 1. automatic operation mode, 2. manual operation mode, and 3. bypass/reset mode.

Automatic Operation Mode

To use the bobbin stripper in automatic operation mode, set the mode selector switch to the 🌀 position. The bobbin stripper removes or strips the remaining yarn from the bobbin automatically when the bobbin reaches the stripping position.

Manual Operation Mode

To use the bobbin stripper in manual operation mode, set the mode switch to the ✋ position while the CBF is stopped.

* The mode cannot be changed during operation.

This mode is used only for maintenance such as adjustments or inspections, when the bobbin stripper needs to be operated manually.
The bobbin stripper will operate only while the inching button is being pressed with the bobbin stripper in manual operation mode.
To operate the bobbin stripper manually again after the operation has ended, set the mode switch to the ⇥ position, and then reset it to the ✋ position.

When the mode switch is returned to the ⇥ position, all operations are reset and manual operation is stopped.

Bypass Mode

To use the bobbin stripper in bypass mode, set the mode selector switch to the ⇥ position.
When a bobbin with yarn remaining reaches the stripping position, the bobbin stripper will transfer the bobbin to the bypass line through the yarn end finder without performing the stripping operation.

CAUTION

If an alarm occurs on the CBF while in automatic operation mode, set the mode switch to ⇥ for bypass mode and press the reset button to reset the operation. After the operation is reset, set the mode switch to 🌀 for automatic operation mode.
If a type C alarm occurs, the mode switch must be set to ⇥ for bypass mode in order to reset the operation.

Sec 3 Checking Bobbin Size

3-1 Bobbins That Are Transferred to the Bobbin Stripper

There are the following two types of bobbins that are transferred to the bobbin stripper.

Skinny bobbins (bobbins with very little yarn on them)	Winding is impossible
Bobbins that are not full bobbins but have a one-third or greater amount of yarn compared to a full bobbin (These bobbins still have enough residual yarn to be wound again on the winder)	Winding is possible

3-2 Checking Devices

- **Tray detection sensor**

The tray detection sensor senses the arrival of a tray at the bobbin stripper.
The device must be mounted in front of the stripping position (1 bobbin before).

- **Feeler**

When the bobbin reaches the bobbin stripper, the feeler checks if the winding operation can be performed or not.
The device must be mounted in front of the stripping position (1 bobbin before).

- **Bobbin detection sensor**

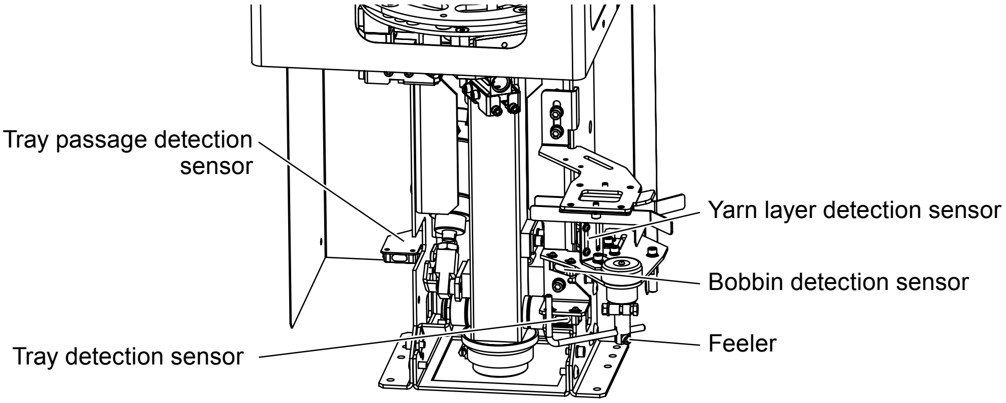
This sensor detects the bobbin at the bobbin stripper.

- **Yarn layer detection sensor**

When the bobbin reaches the bobbin stripper, this sensor re-checks if the winding operation can be performed or not.

- **Tray passage detection sensor**

This sensor detects the feed tray after it has left the bobbin stripper.

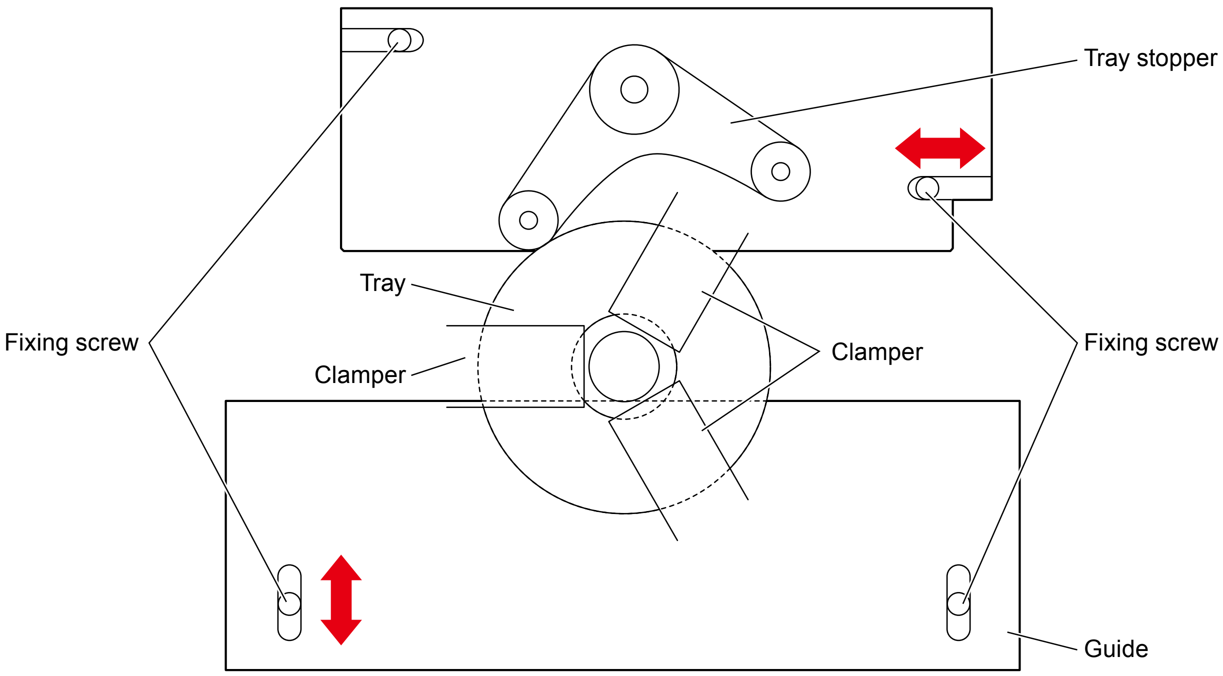


Sec 4 Adjustment Standard

4-1 Centering

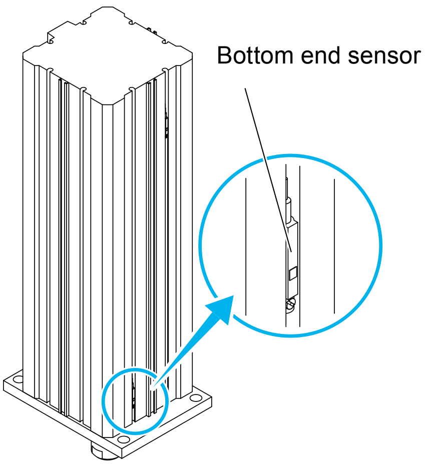
Adjust the bobbin stripper, the tray stop position and the bobbin stripper clamp so that they are centered.

1. **Place an empty tray at the stripping position.**
2. **Lower the clamp using the inching operation, then close and stop the clamp.**
3. **Loosen the fixing screws, adjust the tray stopper and the tray guide, and center the clamp and the tray with each other.**

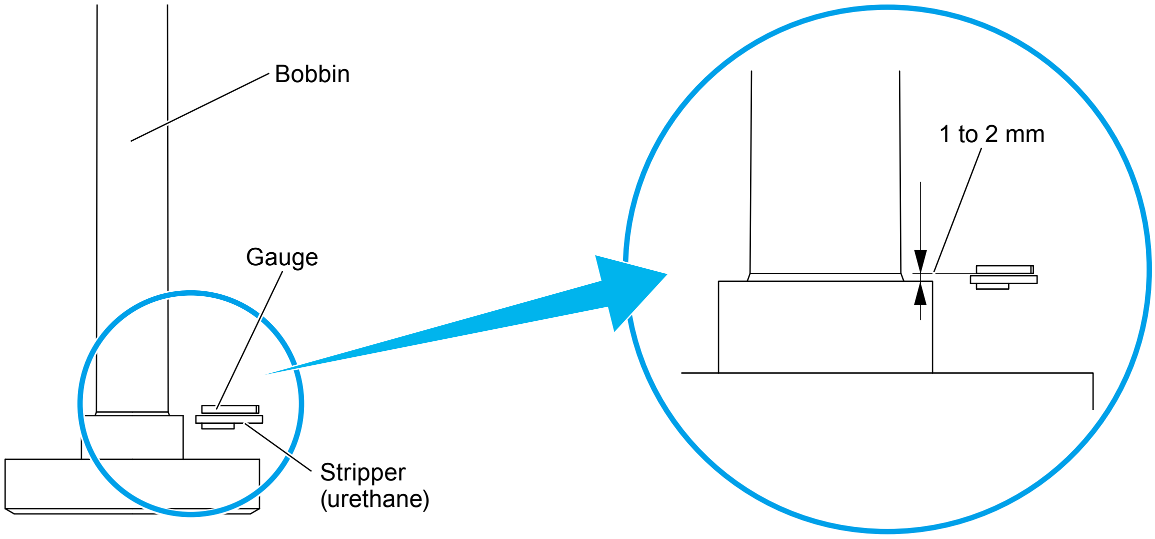

Tray stopper
Tray
Fixing screw
Clamper
Clamper
Fixing screw
Guide

4-2 Clamp Lowering Position

Adjust the position of the bottom end sensor for the lower cylinder, as shown in the diagram on the right, so that there is between 1 and 2 mm from the bottom of the bobbin to the bottom of the gauge.


Bottom end sensor

- **Clamp lowering position**


Bobbin
Gauge
Stripper
(urethane)
1 to 2 mm

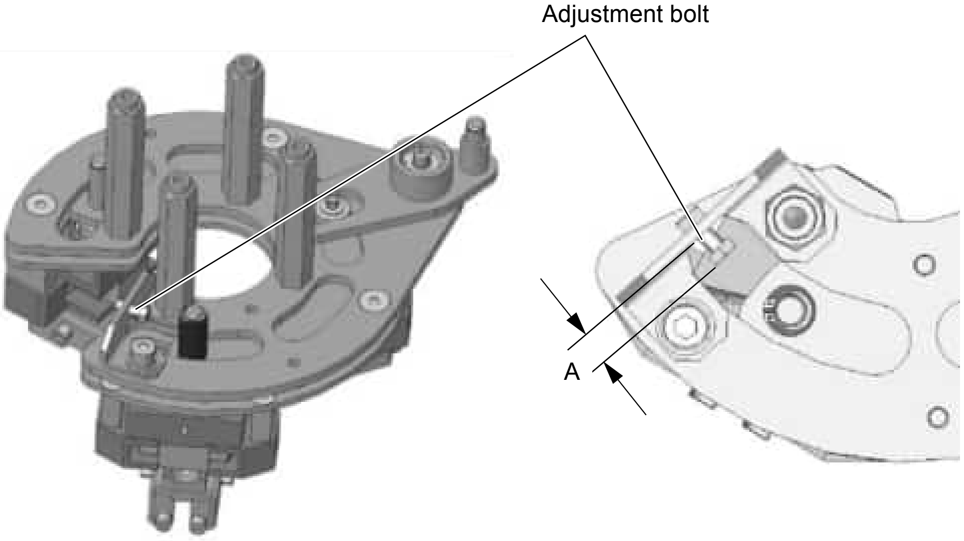
4-3 Clamp

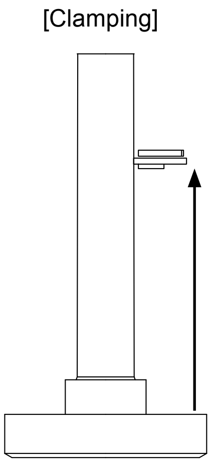
1. **Adjust the clamp with the adjustment bolt.**

   * If dimension A is made shorter, the clamp becomes narrower. (Factory setting: Dimension A = 4 mm)

2. **Use the inching operation to ensure that the gauge clamps the bobbin.**

   * Adjust it so that the gauge does not clasp the top of the bobbin.


Adjustment bolt
A

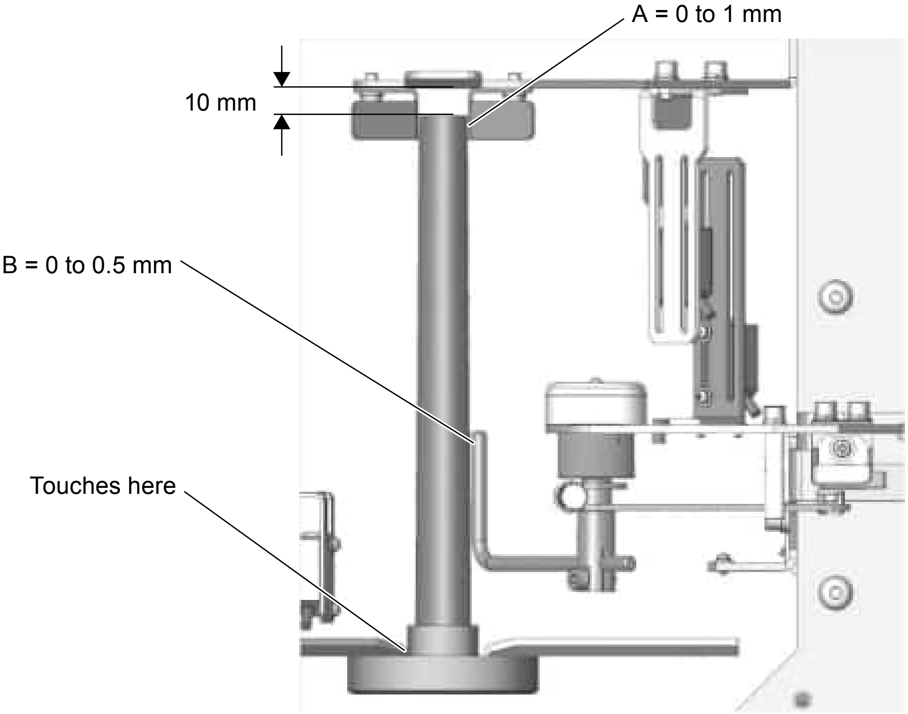


Guide: 2/3 of the bobbin length

4-4 Feeler

The feeler determines whether the remaining yarn can be wound or not.

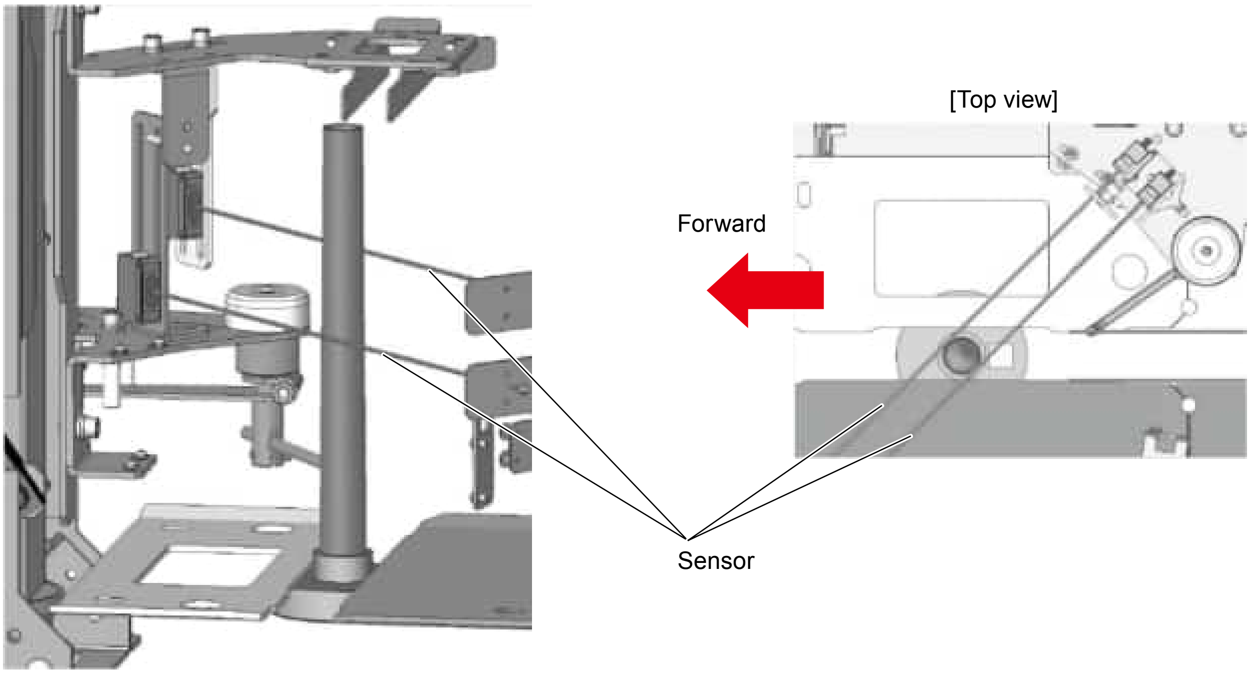
1. **Adjust the bobbin head control guide so that clearance A, between the outer diameter on the top of the bobbin and the bobbin head guide, is 0 to 1 mm.**
2. **Adjust the feeler so that clearance B, between the feeler and the empty bobbin, is 0 to 0.5 mm, and tighten the bolt to fix it in place.**



4-5 Yarn Layer Detection Sensor

This sensor detects the yarn layers and bobbin angle at the stripping position to determine whether the stripper can operate or not.

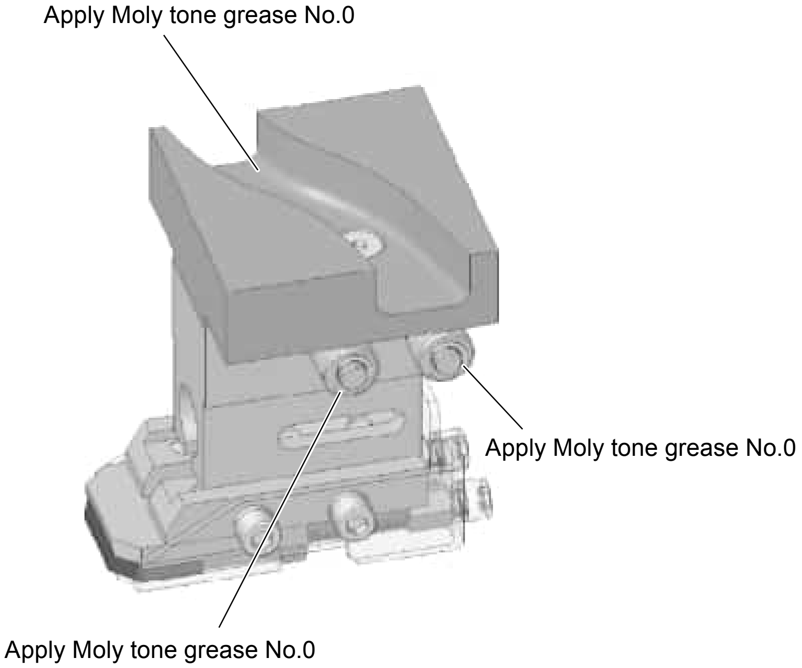
Sets empty bobbin	Sensor detection disabled (Refer to diagram below)
Sets full bobbin	Sensor detection enabled



Sec 5 Maintenance

CAUTION

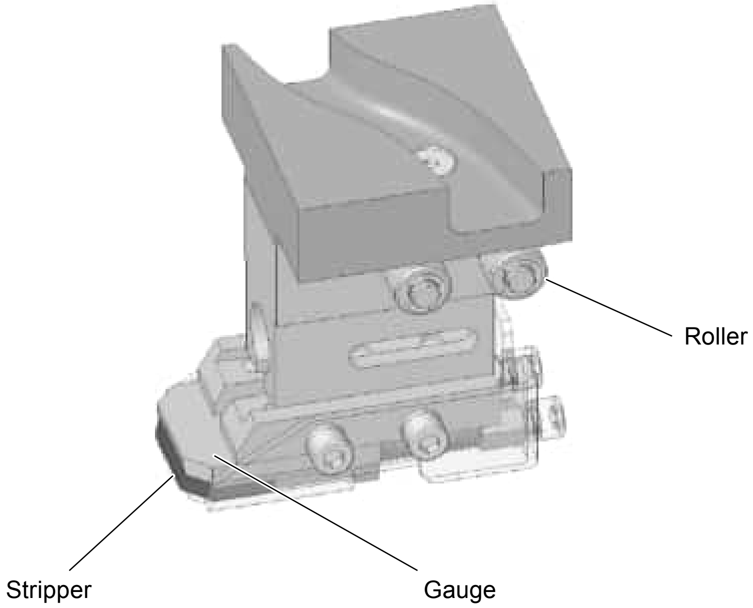
Be sure to always stop the machine operation before performing a maintenance.

Frequency	Item	Guideline
Daily	Photoelectric tubes	Remove the cotton fly around the photoelectric tubes with an air gun *When cleaning the light receptor and the projector, wipe them clean with a dry, soft cloth or with a cloth moistened with water, or water diluted with mild detergent. Do not use alcohol based agents (thinner, benzine, etc.)
Monthly	Cam follower	Remove the cotton fly with an air gun
Every 6 months	Roller	 Apply Moly tone grease No.0 Apply Moly tone grease No.0 Apply Moly tone grease No.0

Sec 6 Consumables

If the parts below are worn causing a failure or problem, replace the worn part or parts with a new one.

Clamper

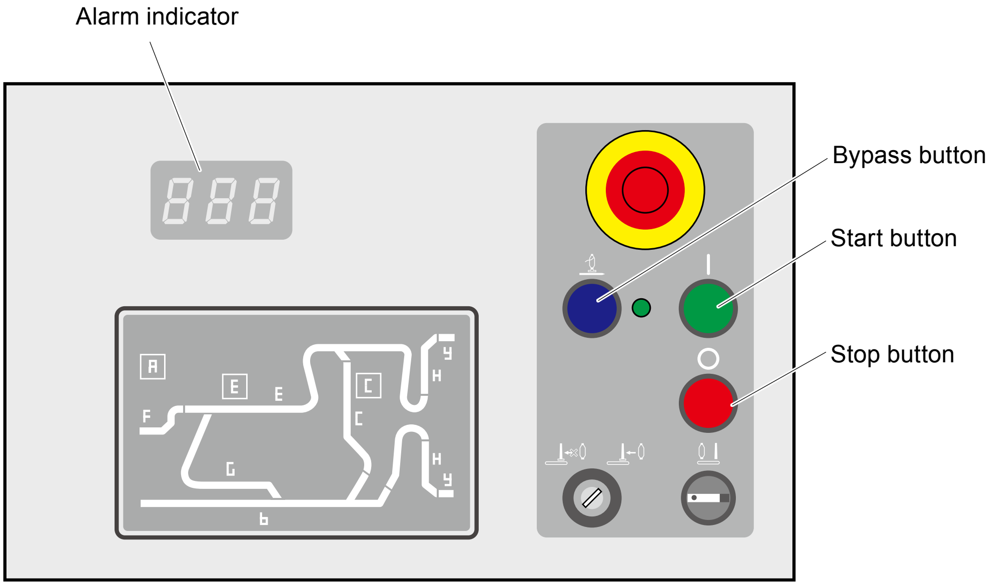

Roller
Stripper
Gauge

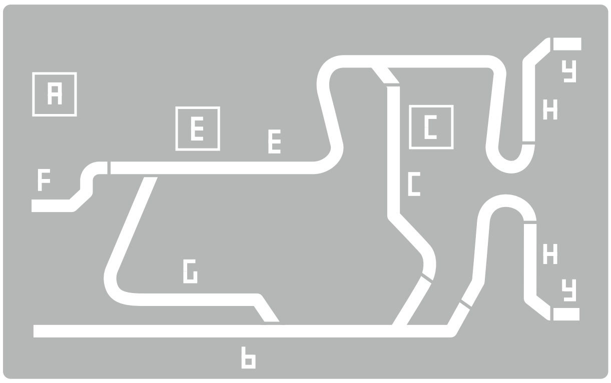
Troubleshooting

Sec 1 Alarm List

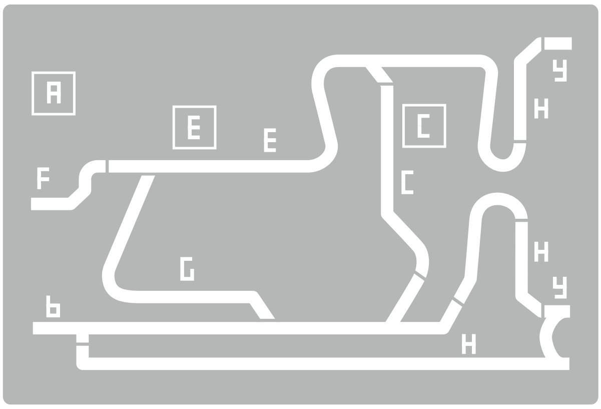
The following is a description of the possible errors that could occur during operation and the countermeasures for them.

* The alarm no. will be displayed in the alarm indicator on the CBF operation panel.


Alarm indicator
888
Bypass button
Start button
Stop button
A
E
E
C
C
F
G
b
H
y
H
y


A
E
E
C
C
y
H
H
y
F
G
b

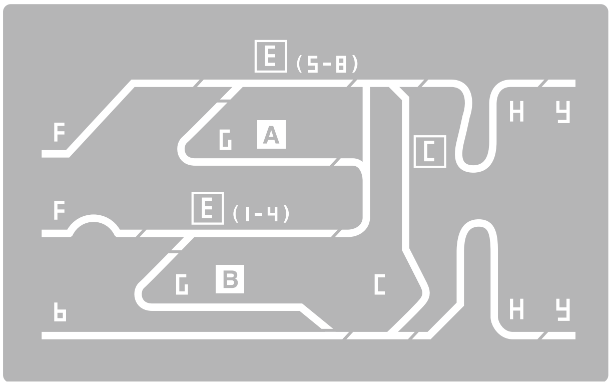
Link Coner specification


A
E
E
C
C
y
H
H
y
F
G
b
H

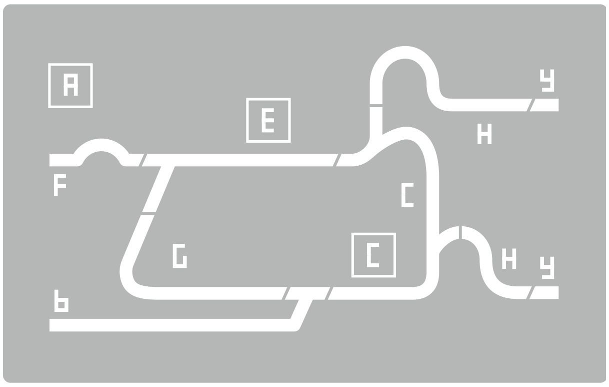
Link Coner specification
(with spin inspector)

[Alarm location]

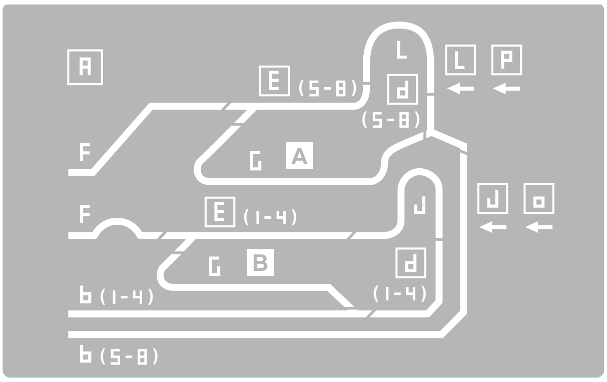
A: **Electricity-related**
b: **Return conveyor**
C: **Bobbin stripper**
d: **Bobbin ejector**
E: **Yarn end finder**
F: **After yarn end finder (feed conveyor)**
G: **Bypass line**
H: **Link conveyor**
J: **Chute part**
L: **Chute part (at the back of the machine)**
o: **Supply part**
P: **Supply part (at the back of the machine)**
U: **Steam setter**
y: **Spinning frame (for Link Coner specifications only)**


E (5-8)
F
G
A
C
H
y
F
E (1-4)
G
B
C
b
H
y

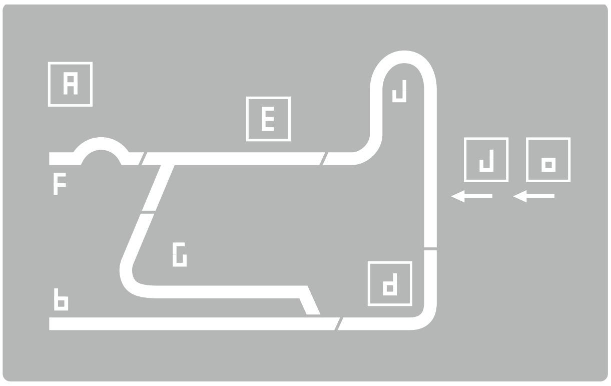
Link Coner for Cop-Robo × 2 specification


A
E
y
H
F
C
G
C
H
y
b

Bobbin Tray for 1 yarn type specification


A
L
E (5-8)
d
(5-8)
L
P
F
G
A
J
o
F
E (1-4)
J
G
B
d
b (1-4)
(1-4)
b (5-8)

Bobbin Tray for 2 yarn type specification



Bobbin Tray for 1 yarn type: Cop-Robo × 2 specification

A: Electricity-related (A5: Front side of the machine, A6: Back side of the machine)

No.	Alarm name	Description	Countermeasures
A1	DC24V Power Error	The 24 V DC power supply in the CBF control box is faulty	- Check the condition of the LED1C of the printed circuit board in the control box * Check if there is a short circuit failure in the wiring when LED is turned OFF
A2	CAN Comm. Err	CAN (lower order) communication error	- Check the VOS alarm screen to find the alarm location - Check the wiring for the fiber SPC and to each slave (power supply lines and communication line), and check the slave switch
A3	PC LINK Comm. Err	CAN (upper order) communication error	- Check for cable connector, pin and other disconnections - Check to make sure that the power is supplied to the fiber SPC
A4	Conveyor Thermal Trip	An overload or open-phase has occurred in the return conveyor, feed conveyor, or link conveyor due to yarn dragging or some other reason	- Check the motor and belts, and remove the cause of the trip. Then reset the thermal relay - If the return conveyor is an inverter specification, check the contents of the inverter alarm and reset it
A5 A6	Yarn End Find Thermal Trip	An overload or open-phase has occurred in the yarn end finder motor (for the searcher spindle and rotary cutter, as well as the spindle, CBF, and conveyor)	Check the motor and belts, and remove the cause of the trip. Then reset the thermal relay.
A7	Remote I/O Output Error	An output error has occurred at the slave or SPC	- Check the VOS alarm screen to find the alarm location - Remove the cause and turn the circuit breaker OFF/ON (Replace the circuit board if the alarm is still ON)
A8	Emergency Stop	The CBF emergency stop switch has been pressed	Perform a safety check and after releasing the switch, press the CBF start button. * Even when the CBF power supply is down, an emergency stop alarm will also be displayed on the VOS (but not displayed on the indicator). A communication alarm will also be displayed on the VOS at the same time.

b: Return conveyor (b1~b4: Front side of the machine, b5~b6: Back side of the machine)

No.	Alarm name	Description	Countermeasures
b1 b5	TrayFull atReturnC/V	The full of trays sensor for the return conveyor is ON	The trays that are returned are in excess of the processing capability of the CBF. Wait for the CBF to process the trays.
b2 b6	Tray Jam in Empty Line	A tray is jammed in the return conveyor due to yarn dragging or some other reasons	Remove the cause and press the CBF start button
b4	Jam After Ret. C/V Ejec	Tray is jammed after it was discharged at the empty line	Remove the cause and press the CBF start button

C: Bobbin stripper

No.	Alarm name	Description	Countermeasures
C1	Stripper Sensor Err	The home position for suction shutter is OFF	Check the cable disconnection, air leaks, sensor malfunction, and stripper for adjustment. Remove the cause. Set the stripper mode switch to the bypass mode temporarily and press the CBF start button. Then set it back to the automatic operation mode.
C2	Bobbin Come Off	The bobbin was removed from the tray during the stripper operation	Check stripper for adjustment. Remove the cause. Set the stripper mode switch to the bypass mode temporarily and press the CBF start button. Then set it back to the automatic operation mode.
C5	Cylinder Alarm	There is a cylinder error on the stripper. An alarm occurred due to a lower end sag, or due to an upper/lower end sensor detection error.	Check air leaks, sensor malfunction, and stripper for adjustment. Set the stripper mode switch to the bypass mode temporarily and press the CBF start button. Then set it back to the automatic operation mode.
C6	Tray Dischrg Failure	Tray was not ejected properly at the stripper	Remove the cause. Set the stripper mode switch to the bypass mode temporarily and press the CBF start button. Then set it back to the automatic operation mode.
C7	Tray Jammed After Stripper	Tray is jammed after stripper	Remove the cause. Set the stripper mode switch to the bypass mode temporarily and press the CBF start button. Then set it back to the automatic operation mode.
C8	Tray Jam Before Stripper	Tray is jammed before stripper	Remove the cause. Set the stripper mode switch to the bypass mode temporarily and press the CBF start button. Then set it back to the automatic operation mode.

d: Bobbin ejector (d1~d4: Front side of the machine, d5~d8: Back side of the machine)

No.	Alarm name	Description	Countermeasures
d1 d5	Bobbin Removal Failure	Bobbin was not removed at the bobbin ejector	- Make sure that a matching tray is used for the bobbin - Check if the belt is worn - If the belt does not rotate, check the motor
d2 d6	Bobbin Jam Inside Ejector	The passage check sensor does not turn ON even 3 seconds after the bobbin is removed	- Check if a bobbin is jammed near the passage check sensor inside the bobbin ejector - Check the sensor if an alarm occurs even when there is no jammed bobbin
d3 d7	Ejctr Peripheral Tray Blck	1) The tray detection sensor remains ON even after the feed solenoid operates three times repeatedly 2) The tray detection sensor at the bobbin ejector is OFF, and the full of trays detection sensor is ON at the same time. 3) Even though four trays are fed from the bobbin ejector, the full of trays detection sensor does not turn ON at the supply part chute position.	1) Check if a bobbin with yarn is stuck to the bobbin ejector at the bobbin removing position. If an alarm occurs even when there is no problem, check the tray detection sensor and the feed solenoid 2) Check if a bobbin is stuck to the bobbin pusher guide or the full bobbin detection feeler 3) Check if there is a yarn dragging between the bobbin ejector and the chute part, and remove the cause. If this alarm occurs frequently even when there is no jammed tray, check if the feed solenoid in the bobbin ejector and the full of bobbins detection sensor in the chute position detect a tray correctly. * Readjust the device that has a problem to remove the cause of any tray jam
d4 d8	Emp Bobbin Transport Error * This alarm will not be displayed if the setting of the “Empty bobbin return” is “Without” on the VOS screen.	A problem occurred at the empty bobbin conveyance device.	Check if the empty bobbin conveyance device is working correctly

E: Yarn end finder (E1~E4: Front side of the machine, E5~E8: Back side of the machine)

No.	Alarm name	Description	Countermeasures
E1 E5	Mouth moved off home pos	Cop-Robo mouth is not in the home position	Check the air pressure and home position sensor
E2 E6	Bobbin Removal Alarm	A bobbin is missing at the Cop-Robo mouth.	- Check bobbin holder for adjustment - Press the CBF stop button, and remove the bobbin. Then press the CBF start button.
E3 E7	Tray Jam at YEF	A tray is jammed either at the rotary cutter or the searcher part	Remove the cause
E4 E8	Tray Jamm Before YEF	A tray is jammed right before the rotary cutter	Remove the cause

F: After yarn end finder (feed conveyor)

No.	Alarm name	Description	Countermeasures
F1	Tray Jam at CBF Exit	A tray is jammed at the CBF exit	Remove the cause
F2	Tray Jam At Feed C/V	A tray is jammed on the back side of the winding unit and at the feed conveyor	Remove the cause

G: Bypass line (G1~G2: Front side of the machine, G5~G6: Back side of the machine)

No.	Alarm name	Description	Countermeasures
G1 G5	TrayFull inBypassLine	The bypass line is full of trays	Process the yarn tip, and press the bypass button
G2 G6	3-min Alarm Actvtn in Bypass	A large number of bobbins with yarn end finding errors have occurred	Process bobbins in the bypass line, and press the bypass button

H: Link conveyor

No.	Alarm name	Description	Countermeasures
H1	*Spin Inspector Tag Error Alarm	Defective tag detected at reading station	Remove defective tag tray
H2	Empty Line Related Error	A problem has occurred at the return conveyor of the link part	Remove the cause
H3	FullBobbin Related Error	A problem has occurred in the feed conveyor of the link part	Remove the cause
H4	*CBFSpeCntlBoard Alm	An alarm has occurred at the control box mounted for CBF special specifications	Check the cable outlets, such as the thermal trip and power supply connector as well as the switch setting for each printed circuit board.
H5	*YrnWasteRmv Eqp Alm	An alarm has occurred at the yarn waste removal device	Check the jammed tray and the cylinder out of home position.
H6	*Jam in Spin INS Buffer C/V	A tray is jammed in the spin inspector buffer conveyor	Remove the cause
H7	*Spin Inspctr Bffr C/V Thrml Trp	An overload or open-phase has occurred in the spin inspector buffer conveyor	Check the motor and belts, and remove the cause of the trip. Then reset the thermal relay.
H8	*Spin inspector Alarm	Check the tray detection sensor for the spin inspector	- Check the yarn dragging and tray guide for adjustment - Remove the cause

* Depending on the specifications, these may not be displayed.

J: Chute part (Front side of the machine), L: Chute part (Back side of the machine)

No.	Alarm name	Description	Countermeasures
J1 L1	Discharge Error at Chute	A tray feed error has occurred at the chute part	Remove the cause
J2 L2	Bobbin Chute Error	A chute error has occurred	Check the chute guide and the top/bottom judgement part
J4 L4	Tray Jammed before Chute	A tray is jammed before the chute part	Check the yarn dragging and the tray flow
J6 L6	Tray Jammed after Chute	A tray is jammed after the chute part	Check the yarn dragging and the tray flow

o: Supply part (Front side of the machine), P: Supply part (Back side of the machine),

[PF type]

No.	Alarm name	Description	Countermeasures
o1 P1	Pump Motor Alarm	The pump motor is continuously running	Check the top end and bottom end of the hoist
o2 P2	Vibrating Feeder Motor Alarm	There is an inverter alarm for the vibrating feeder or a thermal trip	- Check the inverter alarm code and the motor load - Remove the cause and press the reset switch on the inverter
o3 P3	Supply Part Motor Alarm	An overload or open-phase has occurred at the supply part motor	- Check the thermal relay in the supply part control box - Check the load of the tripped motor
o4 P4	Bobbin Jammed on Pusher	A bobbin is jammed on the pusher	Remove the cause
o5 P5	Pusher Alarm	A bobbin is caught between pushers	- Remove the cause - Check pusher for adjustment. - Check the pusher operation detection sensor
o6 P6	Jam at Parts Feeder Exit	A bobbin is jammed at the parts feeder exit	Remove the cause
o7 P7	Bobbin Ejector Thermal Trip	An overload or open-phase has occurred at the bobbin ejector motor	- Check the thermal relay in the supply part control box - Check the bobbin ejector or the return conveyor motor
o8 P8	Emergency Stop	The CBF emergency stop switch is pressed at the supply part	Check the emergency stop switch located below the operating panel or the doffing box

[VCF type]

No.	Alarm name	Description	Countermeasures
o1 P1	Bobbin Inlet is Clogged	A bobbin is clogged at dam part, or below vertical conveyor	- Remove the cause - Check bobbin detection sensor for adjustment
o2 P2	Vertical Conveyor Alarm	A bobbin is clogged on the vertical conveyor	Remove the cause
o3 P3	Supply Part Thermal Trip	Overload, phase interruption in bobbin ejector motor or residual-yarn ejector conveyor motor	- Check the thermal relay in the supply part control box - Check bobbin ejector or residual-yarn ejector conveyor motor
o4 P4	Bobbin Jammed on Pusher	A bobbin is jammed on or before pusher	- Remove the cause - Check bobbin detection sensor for adjustment
o5 P5	Pusher Alarm	A bobbin is caught between pushers	- Remove the cause - Check pusher for adjustment - Check pusher operation detection sensor
o6 P6	1 standby position bobbin stuck	A bobbin is clogged near single bobbin standby position	- Remove the cause - Check bobbin detection sensor for adjustment
o7 P7	Rotor Alarm	The home position for rotor is OFF	- Remove the cause - Check home position sensor for adjustment
o8 P8	Bunch Remover Alarm	- The home position for bunch remover is OFF - A bobbin is clogged in the bunch remover	- Remove the cause - Check home position sensor for adjustment

U: Steam setter

No.	Alarm name	Description	Countermeasures
U1	*Steam Setter Alarm	An error has occurred in the steam setter	Remove the cause
U2	*Setter Request Sig. OFF	A tray cannot be fed because the steam setter request signal is OFF	Remove the cause

* Depending on the specifications, these may not be displayed.

Y: Spinning frame (for Link Coner specifications only)

No.	Alarm name	Description	Countermeasures
Y1	Spinning Frame Error	An error has occurred at the spinning frame	Check the spinning frame
Y2	Jammed at spin. Frame	A tray is jammed at the spinning frame entrance	Check the spinning frame

Sec 2 Troubleshooting

2-1 Cop-Robo

- **When the yarn end find operation does not perform for a full bobbin, but it does for an empty bobbin**

Cause	Countermeasures
There is a full bobbin detection sensor error	- Check sensor for adjustment - Check sensor input If error persists, check connectors or replace sensor

2-2 Tray Conveyor

- **When the return conveyor motor and the CBF conveyor belt do not rotate**

Symptom	Cause	Countermeasures
Motor operates normally (turns on)	Belt fell off	Remove yarn waste and attach belt
	Belt is slipping	- Remove yarn entangled on pulley - Replace belt if it is stretched
	Belt broke apart	Replace belt
Motor does not operate	Thermal relay tripped	- Check for pulley faults (yarn entanglement or bearing damage) →Remove yarn waste, or replace bearing - Check for motor errors →Replace motor - Check whether a motor connector has been disconnected
	Machine is stopped (normal)	When emergency stop switch has been pressed, release it and press CBF start button
	Maintenance mode is enabled (normal)	Check operation indicator (green LED). If flashing, turn maintenance switch OFF, then press CBF start button.
	Slave force output mode is enabled (normal)	Check CBF alarm indicator. If "¯ ¯“ is displayed, check each slave and cancel force output mode. Then press CBF start button.
	***Only the return conveyor motor** Tray conveyor switch is OFF (normal)	Check machine and CBF tray conveyor switch

- **When the tray feed is not working properly**

Cause	Countermeasures
Clogged with yarn waste or cotton fly	Remove yarn waste or cotton fly
Belt is worn	Replace belt
Belt spring guide is warped or bent	Repair warped or bent spring guide

- **When the tray does not return to the spinning frame, the empty bobbin is not ejected by the bobbin ejector, or it does not chute into the empty tray**

Cause	Countermeasures
Lot change mode enabled	Check lot change key

2-3 Bobbin Stripper

- **When the removal operation does not occur even though the bobbin still has yarn remaining on it**

Symptom	Cause	Countermeasures
Tray is ejected without performing removal operation	There is a full bobbin detection sensor error	- Adjust full bobbin detection feeler - Check sensor input If error persists, check connectors or replace sensor
	There is a sensor error for detecting bobbins that need winding	- Check sensor for adjustment - Check sensor input If error persists, check connectors or replace sensor
Tray stops at removal position	There is a tray detection sensor error	- Check sensor for adjustment - Check sensor input If error persists, check connectors or replace sensor
	There is a tray guide error	Adjust tray guide position
	There is a tray feed solenoid error	- Check solenoid for adjustment - Check solenoid output If error persists, check connectors or replace solenoid
	There is an air pipe fault	Check air piping and replace if necessary

2-4 Bobbin Ejector

- **The removal operation for empty bobbins does not occur**

Symptom	Cause	Countermeasures
Tray is ejected without performing removal operation	There is a full bobbin detection sensor error	- Adjust full bobbin detection feeler - Check sensor input If error persists, check connectors or replace sensor
	There is a bobbin detection sensor error	- Check sensor for adjustment - Check sensor input If error persists, check connectors or replace sensor
Tray stops at removal position	There is a tray detection sensor error	- Check sensor for adjustment - Check sensor input If error persists, check connectors or replace sensor
	There is a tray guide error	Adjust tray guide position
	There is a solenoid valve for removing bobbins error	- Check the operation of the solenoid valve for removing bobbins - Check for air leaks

- **Bobbins are not removal**

Symptom	Cause	Countermeasures
Motor operates normally (turns on)	Belt fell off	Remove entangled yarn and attach belt
	Belt is slipping	Remove entangled yarn and adjust belt
	Belt broke apart	Replace belt
	There is a Cylinder for removing bobbins error	- Check cylinder operation - Check for air leaks
	There is a tray and bobbins error	Check match between tray and bobbin
Motor does not operate	Thermal relay tripped	- Check for pulley faults (yarn entanglement or bearing damage) →Remove yarn waste, or replace bearing - Check for motor errors →Replace motor - Check whether a motor connector has been disconnected

- **When the ejected bobbins are not separated, that is, all the bobbins are either ejected only into the empty bobbin chute, or only into the skinny bobbin (minimal yarn remaining) chute**

Symptom	Cause	Countermeasures
Skinny bobbin ejection cylinder sometimes fails	There is a skinny bobbin detection sensor error	- Check sensor for adjustment - Check sensor input If error persists, check connectors or replace sensor
	There is a cylinder error	- Check cylinder for adjustment - Check cylinder operation - Check for air leaks
	There is a Minimal Yarn Detection Brush error	- Check brush for adjustment - Check if brush is worn
Skinny bobbin ejection cylinder operates when necessary	There is a skinny bobbin detection sensor error	Check sensor for adjustment
	There is a Minimal Yarn Detection Brush error	Check guide for adjustment
Skinny bobbin ejection cylinder does not operate at all	There is a skinny bobbin detection sensor error	- Check sensor for adjustment - Check sensor input If error persists, check connectors or replace sensor
	There is a cylinder error	- Check cylinder for adjustment - Check cylinder operation - Check for air leaks - Check solenoid valve operation
	There is a Minimal Yarn Detection Brush error	- Check brush for adjustment - Check if brush is worn

- **When the tray is not fed after bobbin removal**

Symptom	Cause	Countermeasures
Supply unit chute is not full	There is a PXS (chute position full with trays) error	- Check sensor for adjustment - Check sensor input If error persists, check connectors or replace sensor
	There is a solenoid error on tray feed from bobbin ejector	- Check solenoid for adjustment - Check solenoid output If error persists, check connectors or replace solenoid
	There is a tray guide error	Check guide for adjustment
Supply unit chute is full	Normal	---

- **When the rotating warning light (red) turns on**

Symptom	Cause	Countermeasures
Tray on bobbin ejector is clogged	There is a solenoid error on tray feed from bobbin ejector	- Check solenoid for adjustment - Check solenoid output If error persists, check connectors or replace solenoid
Bobbin fell off near bobbin ejector	There is a bobbin removal drive error	- Check pulley connection for bobbin removal - Check cylinder for adjustment
	There is a bobbin removal guide error	Check bobbin guide connection and positioning adjustment
Bobbin is clogging or blocking bobbin ejector	There is a bobbin removal guide error	Check bobbin guide connection and positioning adjustment
	There is a bobbin ejector motor error	- Check for entangled yarn on pulley - Check belt for adjustment
Cannot find error, but rotating warning light is turned on	There is a passage check sensor error	- Check sensor for adjustment - Check sensor input If error persists, check connectors or replace sensor
	There is a tray detection sensor error	Check if cotton fly or yarn waste has been detected

2-5 Hoist

- **When the hoist does not rise even if the raise button is pressed**

Cause	Countermeasures
There is a doffing box detection sensor error	- Check sensor for adjustment - Check sensor input If error persists, check connectors or replace sensor
There is a bottom end sensor error	- Check sensor for adjustment - Check sensor input If error persists, check connectors or replace sensor
There is an inlet sensor error on vibrating conveyor	- Check sensor for adjustment - Check sensor input If error persists, check connectors or replace sensor
There is a hydraulic system error	Check the rate of discharge flow, discharge pressure, and amount of the restriction of oil

2-6 Vibrating Conveyor

- **When the vibrating conveyor does not operate even though there are no bobbins inside the parts feeder**

Cause	Countermeasures
There is a parts feeder level sensor error	- Check sensor input If error persists, check connectors or replace sensor

2-7 Parts Feeder

- **When the parts feeder does not operate even though there are no bobbins on the feed roller**

Cause	Countermeasures
There is a bobbin detection sensor error on the feed roller	- Check sensor for adjustment - Check sensor input If error persists, check connectors or replace sensor

2-8 Chute

- **When bobbins are not chuted even though the tray is empty**

Cause	Countermeasures
There is a bobbin detection sensor error	- Check sensor for adjustment - Check sensor input If error persists, check connectors or replace sensor

- **Pusher does not operate**

Symptom	Cause	Countermeasures
Bobbins are waiting on pusher	There is a bobbin detection sensor error on pusher	- Check sensor input If error persists, check connectors or replace sensor
	There is a pusher operation detection sensor error	- Check sensor for adjustment - Check sensor input If error persists, check connectors or replace sensor
Empty tray is waiting	There is a tray detection sensor	- Check sensor for adjustment - Check sensor input If error persists, check connectors or replace sensor

- **Chute error occurs frequently**

Cause	Countermeasures
There is a bobbin top/bottom sensor error	- Check sensor for adjustment - Check sensor input If error persists, check connectors or replace sensor
There is a bobbin top/bottom feeler error	Check bobbin top/bottom feeler for adjustment
There is a bobbin guide error	Check bobbin guide for adjustment
There is a bobbin top/bottom selection lever error on drive cylinder	Check air piping
There is a chute guide error	Check air piping

- **Feed roller does not rotate**

Symptom	Cause	Countermeasures
Motor operates normally (turns on)	Belt fell off	Remove entangled yarn and attach belt
	Belt is slipping	Remove entangled yarn and adjust belt
	Belt broke apart	Replace belt
Motor does not operate	There is bobbin detection sensor error on pusher	- Check sensor for adjustment - Check sensor input If error persists, check connectors or replace sensor
	There is a feed roller bobbin detection sensor error	- Check sensor for adjustment - Check sensor input If error persists, check connectors or replace sensor
	There is a motor error	Check an overload (entangled yarn, etc.)

AD

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9
Chapter

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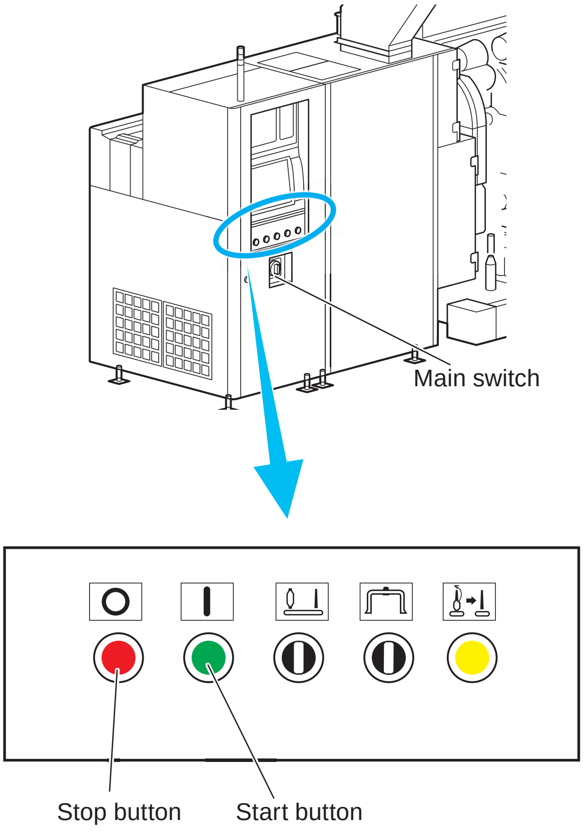
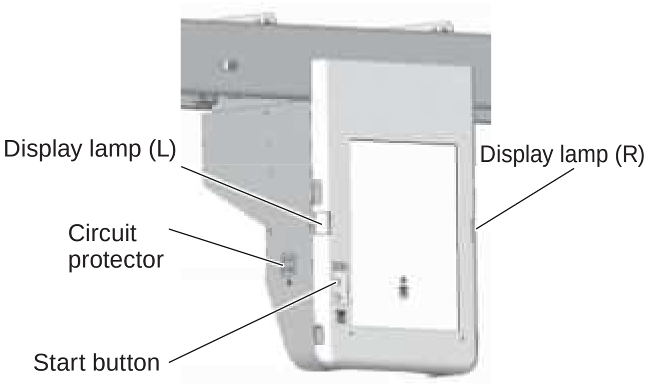
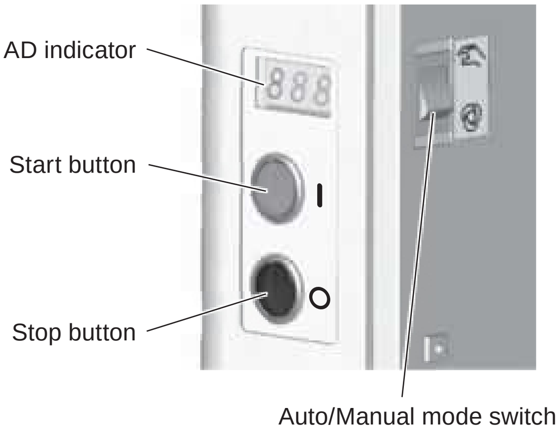
Sec 1 Operation Method

Winder	AD
 Main switch Stop button Start button	 Display lamp (L) Display lamp (R) Circuit protector Start button **[AD operation panel]**  AD indicator 888 Start button Stop button Auto/Manual mode switch

1-1 Startup (Normal operation)

1. **Press the main switch.**
2. **Raise the circuit protector operation lever located on the left side of the AD.**
   The AD power supply is turned ON and the AD can be started up. (The AD start button lights up)
3. **Press the winder start button.**
   The green display lamps on both sides of the AD light up, and the AD begins operation.
4. **If the AD automatic start mode is turned OFF, press the AD start button.**

1-2 Stoppage

Stopping the Winder & AD Simultaneously

1. **Press the winder stop button.**
   The blower, conveyor, blow cleaner and winding units all stop automatically in sequential order, and the AD automatically stops its travelling operation.
2. **Turn OFF the main switch.**

CAUTION

As it takes some time to completely stop the AD operation, wait for at least 10 seconds after pushing the winder stop button before turning OFF the main switch.

Stopping the AD (Bringing only the AD to a temporary stop)

1. **Press the stop button on the AD operation panel.**

* To resume AD operation, press the AD start button.

Emergency Stop

1. **If it is necessary to stop the winder immediately to avoid injury or further machine damage, turn the main switch OFF immediately.**
   The whole machine and its devices will come to a complete stop.

* To resume operation after the emergency stop, turn ON the main switch.

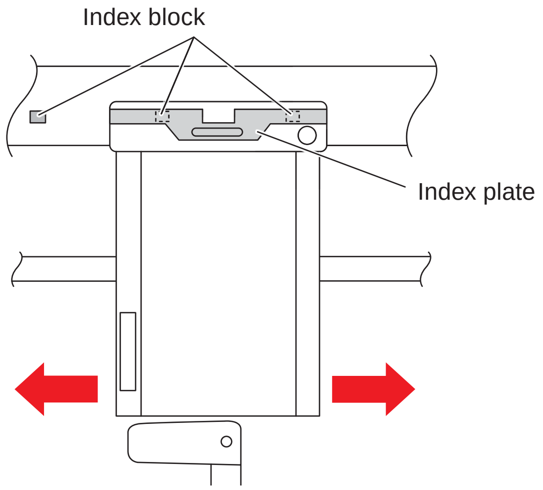
CAUTION

Bringing the machine to a stop in the middle of an operation will cause the machine to overload. Do not use the emergency stop switch unnecessarily, or unless it is an emergency.

1-3 Doffing Operation

Manual Operation Mode

1. **Press the AD stop button to stop the AD automatic operation.**
2. **Set the auto/manual mode switch to manual.**
   The index plate cylinder will be activated.
3. **Move the AD with your hands to engage the index plate on the index block.**
4. **Ensure that the index plate has been correctly engaged on the index block, return the auto/manual mode switch to auto and then reset it to manual.**
   The index plate will engage on the index block.
5. **Press the AD start button to operate in manual mode.**



* Press the start button within 3 seconds (green lamps on both sides will flash) after switching to manual mode. The AD will not operate if there is a delay of more than 3 seconds. Return the mode switch to auto, and start over from step 4.

* The AD performs doffing while the start button is depressed. The AD will stay in the same state after you release the button. If the AD cam shaft rotates 360°, the index plate will automatically disengage to end the operation cycle.

* If you wish to operate the doffer in manual mode again after the cycle has ended, return the mode switch to auto and then start over from step 2.

Automatic Operation Mode

1. **Ensure that the auto/manual mode switch is set to auto, and press the AD start button to engage the AD travelling operation.**
2. **When a winding unit outputs a full package signal, the AD will start to travel toward that unit.**
3. **When the AD approaches the winding unit with the display lamp lit up (indicating a full package), the AD will automatically slow down and the index plate cylinder will be activated.**
4. **The AD stops traveling when the index plate is engaged on the index block.**
5. **The AD automatically performs a series of doffing operations.**
6. **After the series of doffing operations have been completed, the index plate is disengaged from the index block and the AD resumes traveling.**

* Specify the control settings on VOS ahead of time that best suit the machine's specification, the operation conditions and the method of use.

1-4 Returning to the Home Position

Return the device to the home position using the procedure below, if, during the auto mode operation, there is a stoppage in the middle of a cycle, due to a doffing error, for example.

1. **Remove any obstructions that prevent the device from returning to the home position, such as the take-up tube or a package.**
2. **Press the AD start button while it is flashing.**
   Press the start button once for the AD to return to the home position.
   "HP" is displayed on the AD indicator while the device is returning to the home position.
   Once it returns to the home position, the index is disengaged and the "HP" display disappears. The start button also flashes at the same time, and the startup operation is now possible.
3. **Press the AD start button to resume operation.**
   The green display lamp lights up, the start button lamp turns off, and the automatic operation resumes.

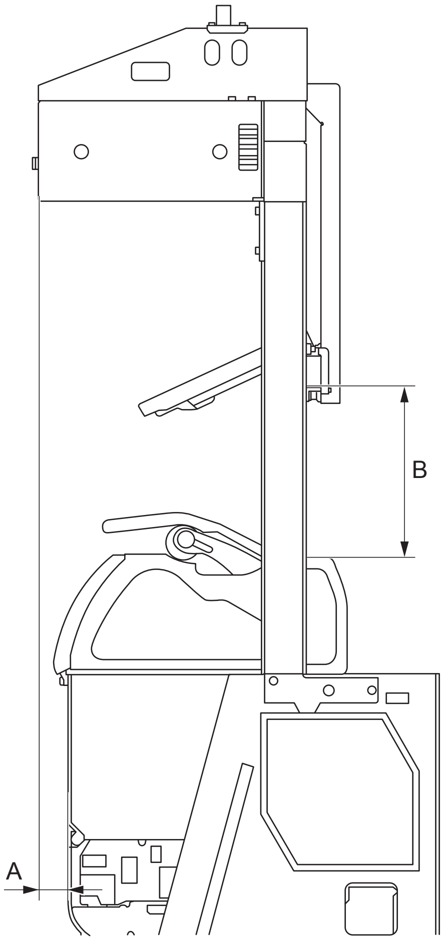
Sec 2 Part Adjustment

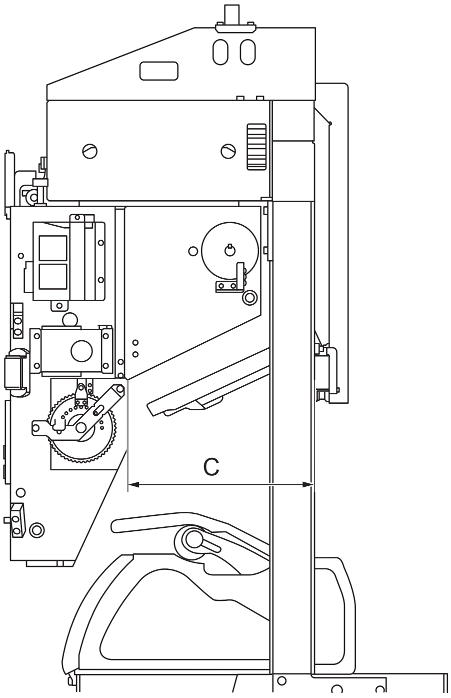
CAUTION

Be sure to always stop the machine operation before performing an adjustment.

2-1 Rail & Stocker Bar

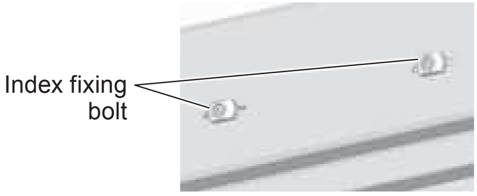
Item	Adjustment Standard	Adjustment Location
Front dimensions of rail	A = 58 mm ± 0.5 mm Remove front cover on unit to check	Both ends on each section
Stocker bar height	B = 345.5 mm ± 0.5 mm Check distance between top of unit case and bottom of stocker bar	Center of each section
Front and back of stocker bar	C = 381 mm ± 0.5 mm Remove the AD cover and check the distance between the AD and the stocker bar	Center of each section





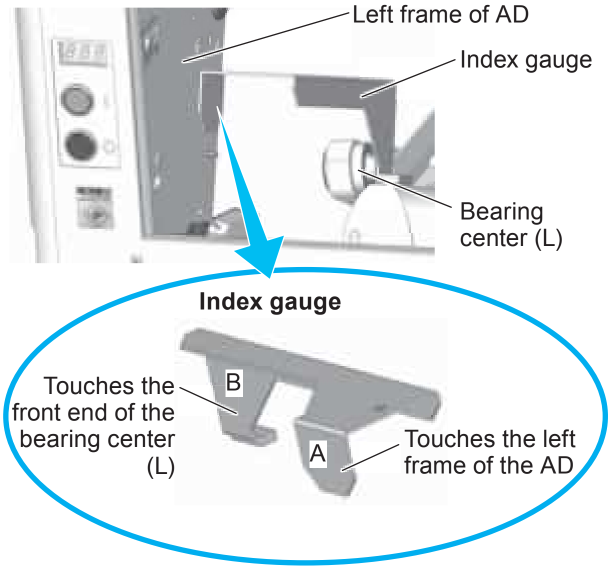
2-2 Index Block

1. **Loosen the fixing bolts on the index block.**

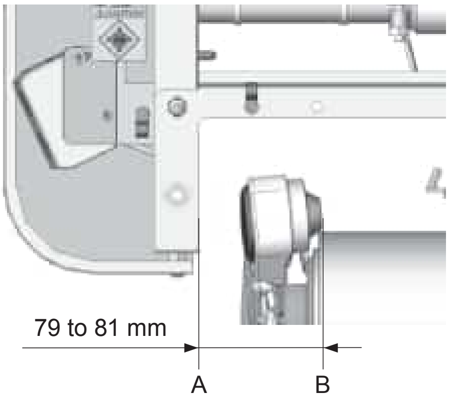

Index fixing bolt

2. **Set the auto/manual mode switch to manual, and engage the index plate on the index block.**

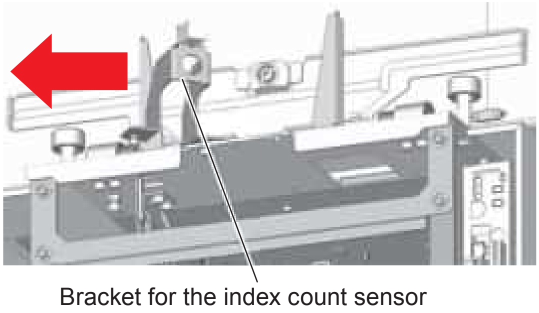
3. **Using the index gauge, adjust the AD unit by moving it to the right and left by hand, so that the horizontal distance between the left frame of the AD and the front end of the bearing center (L) is between "79 and 81 mm."**


Left frame of AD
Index gauge
Bearing center (L)
Index gauge
Touches the front end of the bearing center (L)
B
A
Touches the left frame of the AD

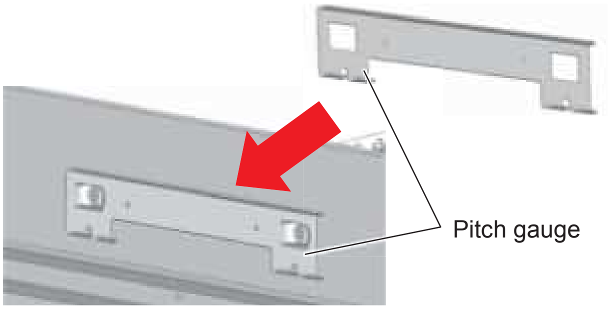
* The index gauge width is 80 mm (between A and B as shown in the diagram on the right). Using the gauge as shown in the diagram, adjust the distance between the front end of the bearing center (L) and the left frame of the AD to secure the appropriate horizontal distance.
When the gauge touches the left frame of the AD, ensure that the gauge stays straight.


79 to 81 mm
A
B

4. **Maintain the AD position as per step 3, and fix the index block.**
Using the diagram on the right as a reference for this procedure, if you remove the front cover of the AD and twist the bracket for the index count sensor, you can fix the index block while the index plate is engaged.


Bracket for the index count sensor

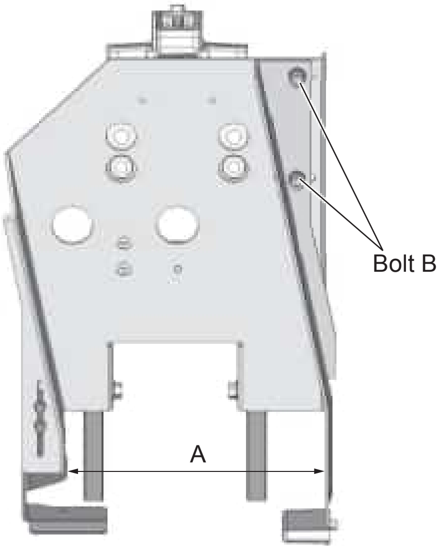
5. **When the yarn type used in this section is the same (when the take-up tube and winding position is the same), use the index block fixed in step 4 as the standard. Maintain the dimensions within the index block as per the pitch gauge and fix the block.**


Pitch gauge

2-3 Stocker

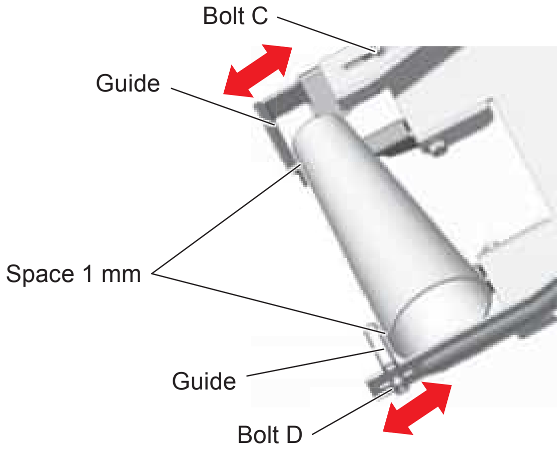
Guide Width on Right Side

A = Take-up tube length + (8 to 10 mm)
Loosen bolt B and fix the width after adjusting “A” as shown in the diagram.



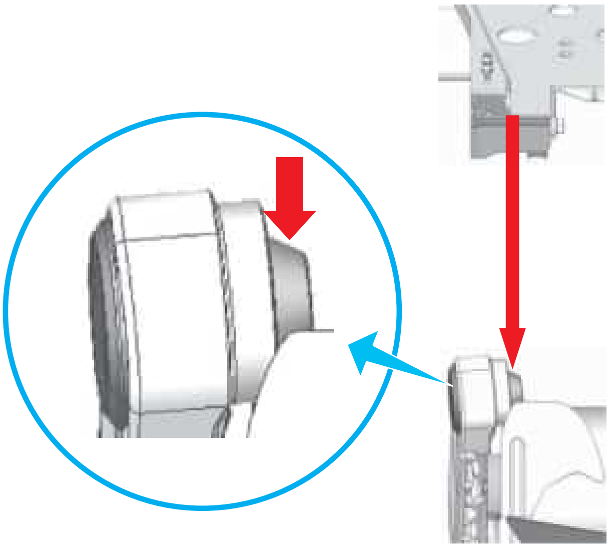
Forward/Backward Direction

Adjust the forward or backward direction of the guide using bolts C and D, so that when the chuck on the AD side is holding the take-up tube on the stocker, the space between the right and left guides and the take-up tube is 1 mm.



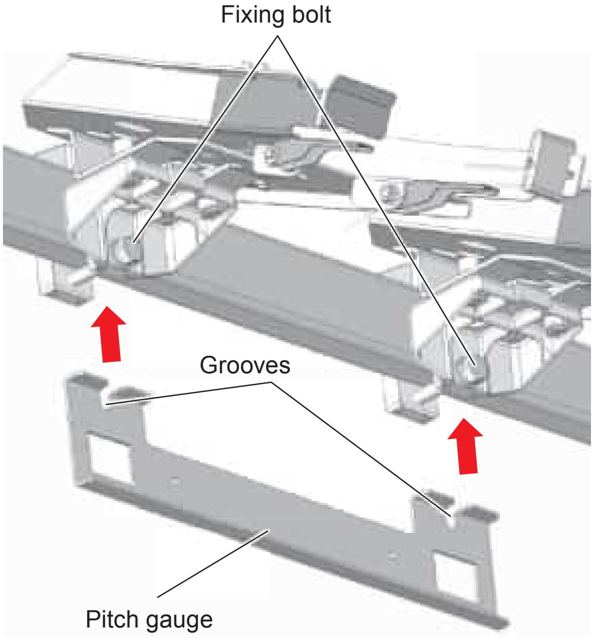
Left/Right Position

Suspend a plump-bob from the inner left side of the stocker, using the middle of the tilted side on the bearing center’s (L) tapered section as a guide, and fix the stocker.



* As with the index block, if the same yarn type is used within the section (when the take-up tube and winding positions are the same), use the fixed stocker mentioned above as a reference standard. Then, maintain the same distance between each stocker using the pitch gauge and fix them. Turn the index pitch gauge around to use.

Set the grooves located on the each end of the pitch gauge so that they fit onto the fixing bolts for the stocker, maintaining the same distance between the stockers, and fix the bolts.

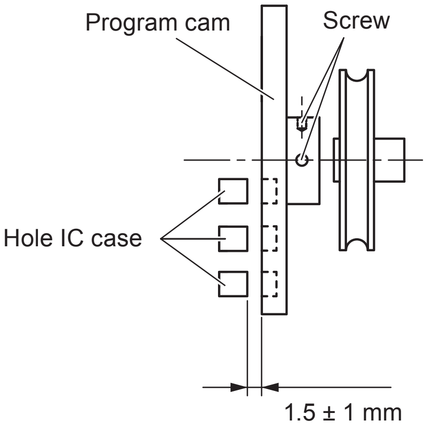


2-4 Sensor

Refer to Chapter 9, 5-2 for further details on the volume settings for the photoelectronic sensor, etc.

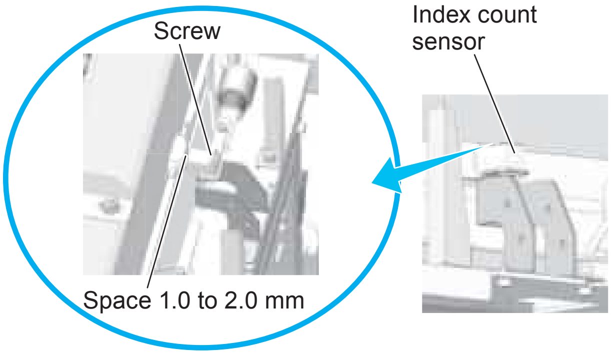
Proximity Switch

Use the screw(s) to adjust the distance between the program cam and the case for the hole IC to 1.5 mm ± 1 mm.


Program cam
Screw
Hole IC case
1.5 ± 1 mm

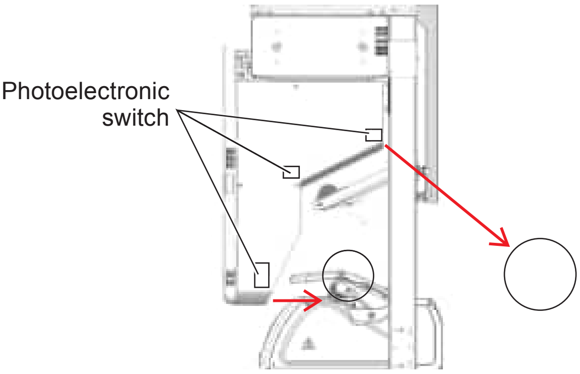
Index Count Sensor Position for Proximity Switch

Use the screw(s) to adjust the distance between the index block and the sensor so that it is between 1.0 and 2.0 mm.


Screw
Index count sensor
Space 1.0 to 2.0 mm

Package Detection/Take-up Tube Detection Position for Photoelectronic Switch

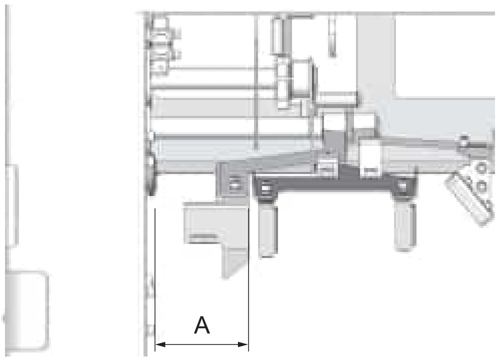
Adjust the photoelectronic switch so that it detects the backward package, the package on the drum and the take-up tube on the stocker.


Photoelectronic switch

2-5 Take-up Tube Control Guide Position

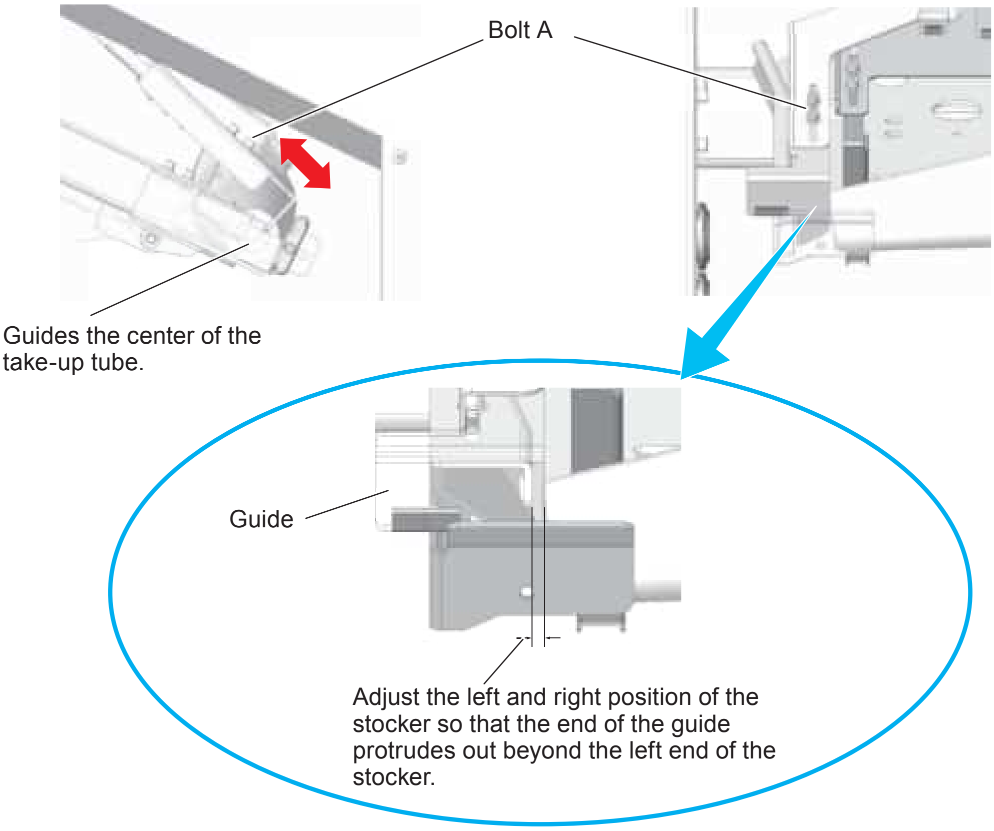
Left/Right Position for L Side Guide

A = 80 to 81 mm



Forward/Backward Position

Loosen bolt A and adjust the guide so that when the guide is lowered onto the stocker, it corresponds to the diameter of the take-up tube.

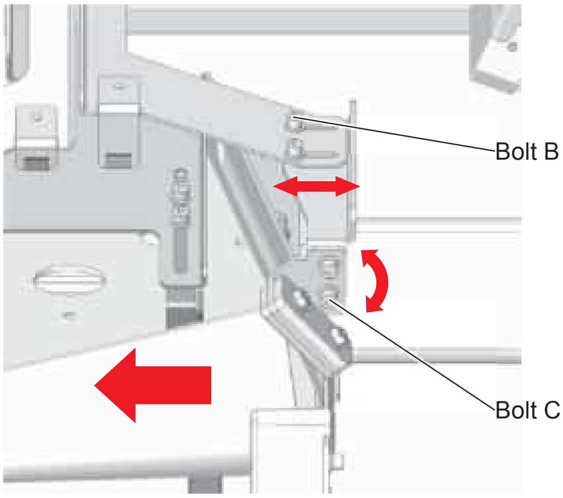


Guides the center of the take-up tube.

Adjust the left and right position of the stocker so that the end of the guide protrudes out beyond the left end of the stocker.

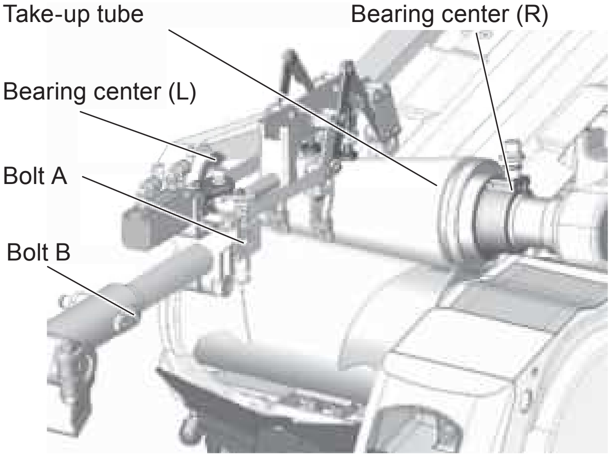
R Side Guide Position

When the guide lowers down onto the stocker as shown in the diagram on the right and the tilted side pushes against the take-up tube, the tube position will move closer to the left side.
Adjust the right and left position using bolt B and the angle of the tilted side using bolt C so that the tilted side of the guide touches the tube when the guide lowers down.

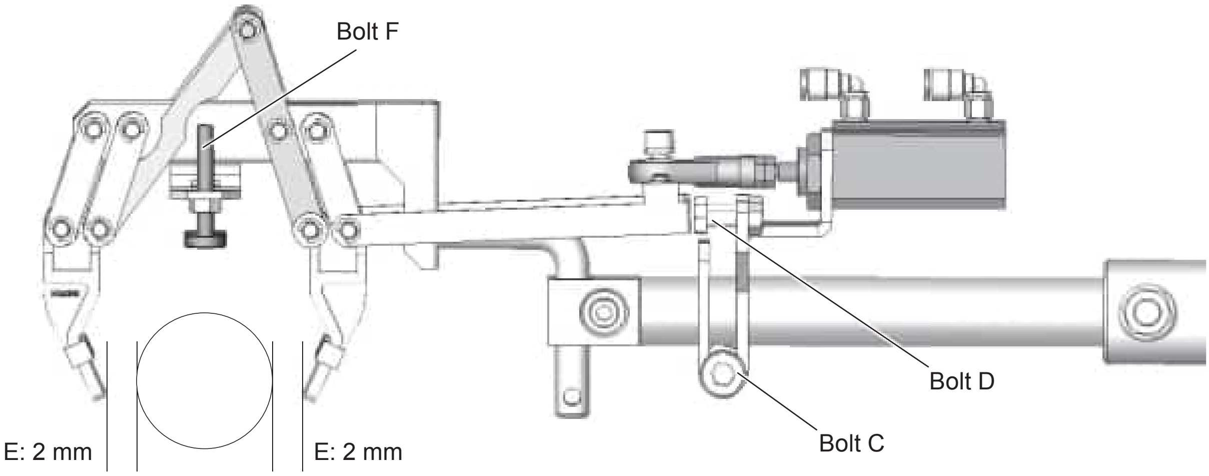


2-6 Chucker

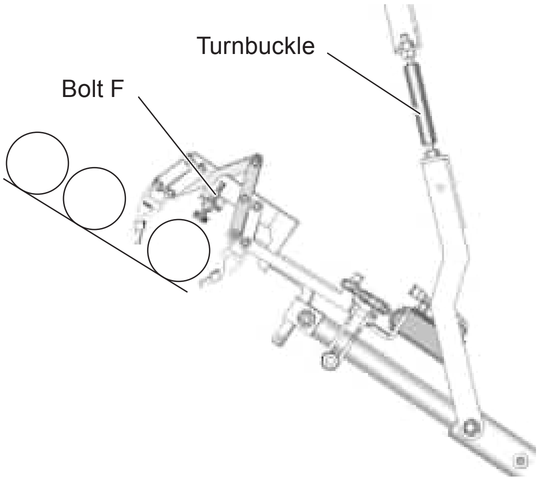
1. **While bolts A and B are loosened, chuck the take-up tube on the drum.**
2. **Align the take-up tube center with the bearing center, and tighten bolts A and B.**
3. **While the chuck lever is opened, loosen bolt C. Move the cylinder position forward or backward so that distance E, between the take-up tube diameter and the chuck lever, is 2 mm. Then, tighten bolt C.**
4. **Use bolt D to make fine adjustments to distance E.**


Take-up tube
Bearing center (R)
Bearing center (L)
Bolt A
Bolt B

5. **While the chucker is holding the take-up tube, lower bolt F until it touches the take-up tube, and fix it in place.**


Bolt F
Bolt D
Bolt C
E: 2 mm
E: 2 mm

6. **Use the inching operation to stop the chucker while it is holding the take-up tube on the stocker.**
7. **Adjust and fix the turnbuckle so that bolt F is at a height where it touches the take-up tube on the stocker.**


Turnbuckle
Bolt F

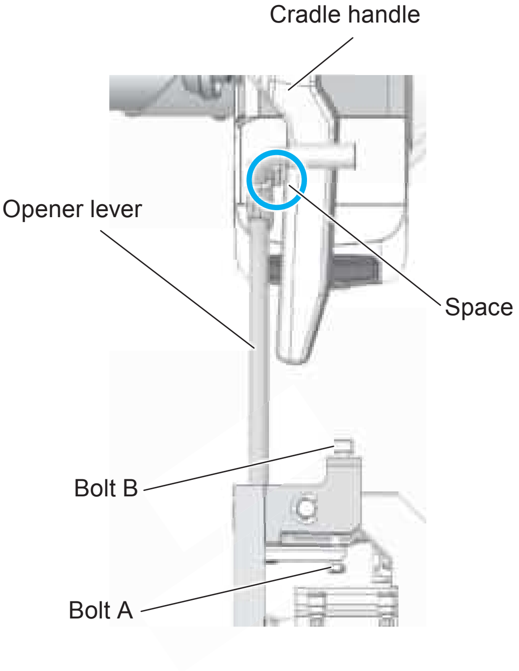
2-7 Opener Lever

Insertion Position

Use bolt A to adjust the insertion position for the opener lever. When there is no take-up tube on the cradle, lower the opener lever. Adjust it so that the space between the cradle handle and the opener lever is between 1 and 2 mm.

[Bolt A]

Tighten	The front end of the opener lever moves right
Loosen	The front end of the opener lever moves left



Opening Amount

Use bolt B to adjust the how much the opener lever opens.
Open the cradle handle on the drum. Tighten bolt B and fix it so that there is 1 mm of space beyond the position where the bearing center (R) is fully opened.

[Bolt B]

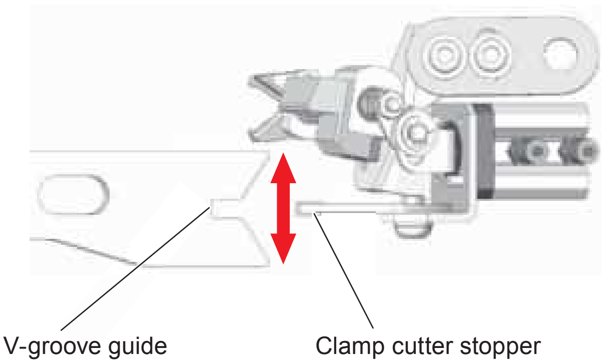
Tighten	The opening amount becomes smaller
Loosen	The opening amount becomes bigger

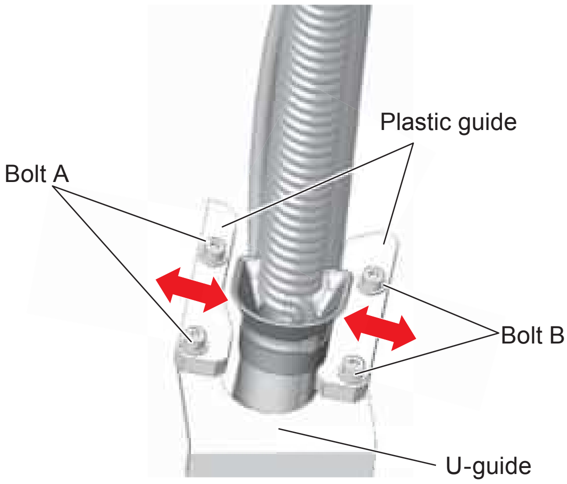
* Here, ensure that the take-up tube inserted by the chucker is set smoothly in between the bearing centers (L) and (R) without having any contact with either center.
The doffing operation becomes more stable as the clearance between the bearing center and the take-up tube widens.

2-8 Cutter

U-guide Width

Lower the clamp cutter and move it to the yarn clamp position.
During this operation, loosen bolts A and B and adjust the plastic guide width on the U-guide for the AD side.
Fix it so that the stopper for the clamp cutter does not come out from the V-groove on the unit side.

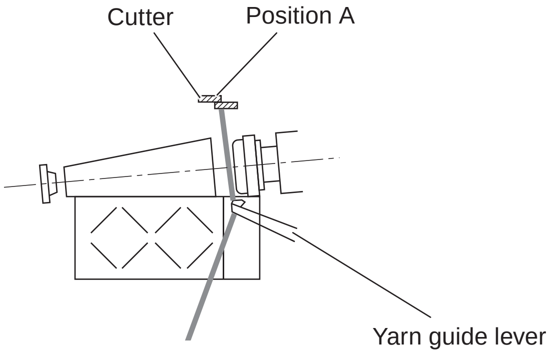


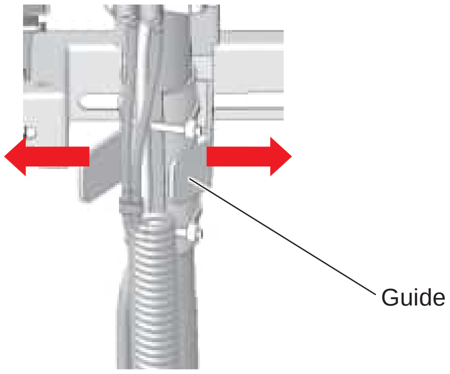


Cutter Swing Stop Position

- **Right/left adjustment**

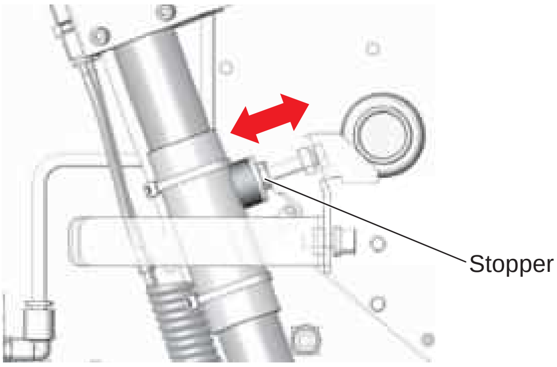
Adjust the right or left position of the guide shown in the diagram below so that, at the end of the cutter swing operation, position A in the diagram on the left is located between the take-up tube and the bearing center (R).


Cutter
Position A
Yarn guide lever



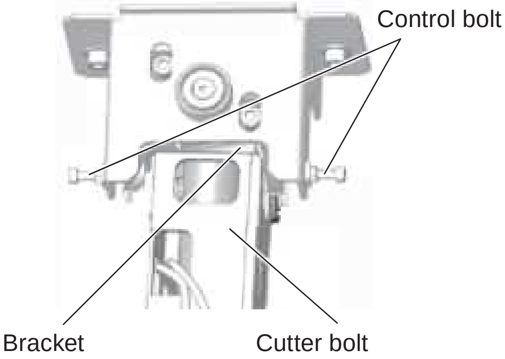
- **Forward/backward adjustment**

Move the stopper position to adjust the cutter swing amount.
During this adjustment, position it so that the end of the yarn can be held between the take-up tube and the bearing center.



Angle Control Bolt for Cutter Lever

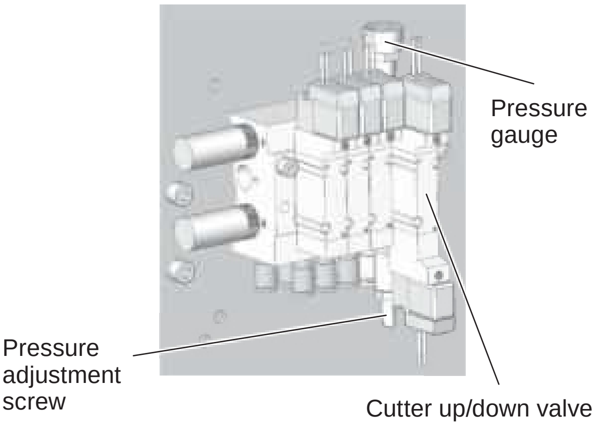
After adjusting the U-guide width and the cutter swing stop position (forward/backward, right/left), adjust the angle control bolt for the cutter lever.


Control bolt
Bracket
Cutter bolt

Up/Down Valve Pressure for Cutter

Pressure setting for up/down valve operation on cutter: 0.25 MPa

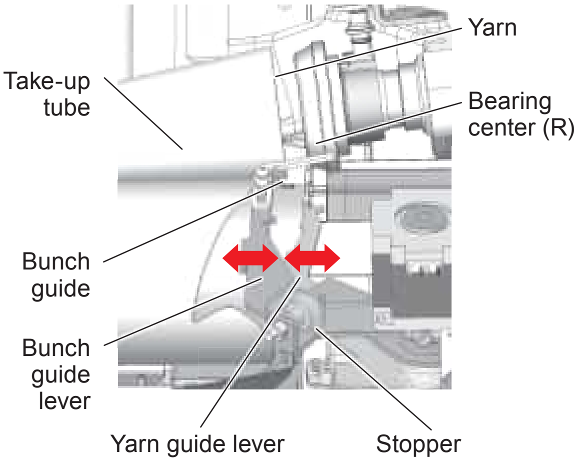
* When the pressure setting drops below 0.2 MPa, the valve may become inoperable. After setting, move the cutter up and down several times and check the pressure setting again.


Pressure gauge
Pressure adjustment screw
Cutter up/down valve

2-9 Yarn Guide Lever

Yarn Guide Lever Swing Amount

Set the appropriate position on the VOS, so that the yarn can be introduced between the bearing center (R) and the take-up tube.

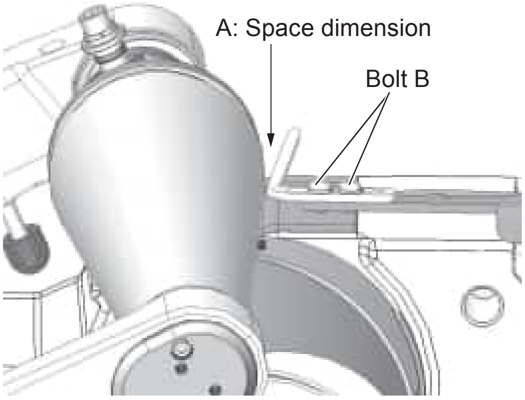

Take-up tube
Yarn
Bearing center (R)
Bunch guide
Bunch guide lever
Yarn guide lever
Stopper

Bunch Winding Position

The bunch guide lever can be swung to the left and the right by taking out or putting in the stopper screw.

Bunch Guide Length

Dimension A: = 2 mm ± 1 mm
Loosen bolt B to adjust.


A: Space dimension
Bolt B

Bunch Winding Length

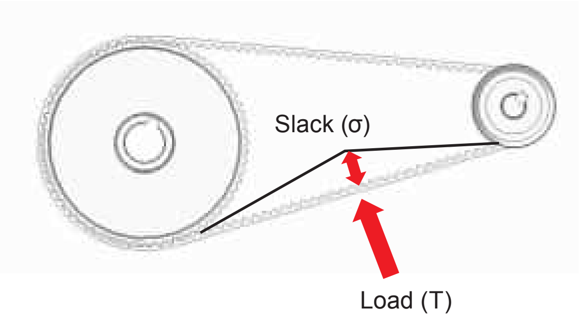
Use the VOS to set the appropriate length for the bunch winding, which is performed on the take-up tube.

2-10 Belt Tension

Default Tension for Each Timing Belt

[Cam shaft]

Default tension value	95 to 165 N
Load (T)	7 to 11 N
Amount of slack (σ)	2.9 mm


Slack (σ)
Load (T)

[Opener]

Default tension value	125 to 215 N
Load (T)	9 to 14 N
Amount of slack (σ)	2.3 mm

2-11 VOS Settings

The VOS settings are listed below. Change the setting conditions when necessary.

[Basic settings]

Travel Command	Set the AD travel method
Travel Standby Pos.	Set the AD waiting position before the travel command
Auto Start Mode	Set the AD startup method
Clmp Cutter No Inchng Mode	Settings related to the inching operation for the clamp cutter during manual mode
Tube Detectn Functn	Set the AD operation with or without the take-up tube on the stocker
Travel Speed	Set the AD travel speed
Pkg Ejection Failure	Alarm occurs when the package cannot be ejected to the rear

[Operation adjustment]

First W-Unit No.	Set the first winding unit No. on each zone
Last W-Unit No.	Set the last winding unit No. on each zone
Bunch Winding Time	Set bunch winding length
SV Inching Time	Set the lowering time for the yarn insert on the clamp cutter
Opener Wait Time	Set the waiting time for package ejection
Opener Rising Stop Time	Set the opener stop position
Yarn Guide Lever Stop Pos.	Set the stop position on the yarn guide lever for the yarn insert operation

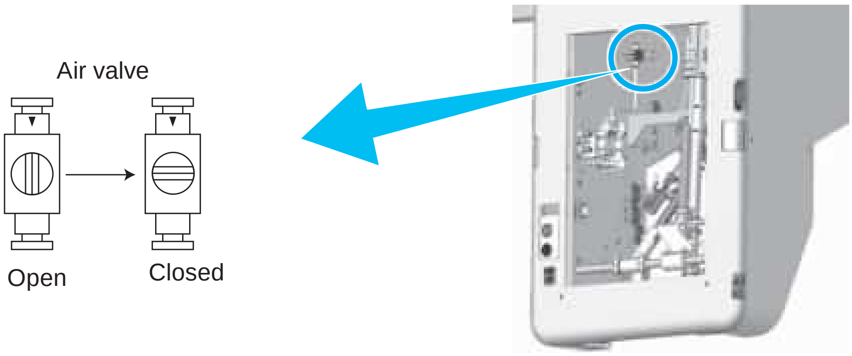
Sec 3 Maintenance

3-1 Before Maintenance & Inspection

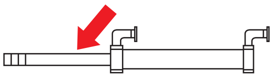
CAUTION

The machine operation must always be stopped before performing maintenance.

1. **Press the winder stop button.**
2. **Press the stop button on the AD operation panel.**
3. **Lower the circuit protector operation lever located on the left side of the AD.**
4. **Close the compressed air valve as shown in the diagram below.**



3-2 Inspection Item & Frequency

Frequency	Item	Guideline
Daily	Photoelectric tubes	Remove the cotton fly around the photoelectric tubes with an air gun * When cleaning the light receptor and the projector, wipe them clean with a dry, soft cloth or with a cloth moistened with water, or water diluted with mild detergent. Do not use alcohol based agents (thinner, benzine, etc.)
	Rail brushes	Remove the cotton fly from the brushes with an air gun
Monthly	Cutter	- Remove the cotton fly or any other contaminants with an air gun - Lubricate the cutter or the clamp plate axes * Use ISO VG10 or a comparable product (Recommend dry type)
Every 6 months	Inside AD	Remove all the covers from the AD and clean the chain and cam follower with an air gun **CAUTION** When cleaning the electrical equipment and suck out the cotton fly from the surrounding area of the electrical equipment, use a vacuum cleaner to suck out the cotton fly. Do not blast it with an air gun or compressed air. Using compressed air causes the cotton fly to get inside the machine leading to electrical equipment malfunction.
	Traveling chain	Lubricate the chain so that the oil gets in between the bush and pin * Use ISO VG68 or a comparable product (spindle oil is also ok)
Yearly	Air cylinder shaft 	Apply extreme-pressure lithium-based grease with mineral oil, NLGI No.2, to the shaft surface **CAUTION** Do not apply any grease which is not a lithium-based grease. If another type of grease is mixed with a lithium-based grease, the grease may harden and undergo a change in properties resulting in a reduction in the performance level of the grease.

3-3 Daily Inspection

Perform a daily inspection of the main frame, rails, pillars and cable chains, etc. Conduct a visual inspection and also check for any abnormal smells or sounds coming from these parts. In particular, be sure to check for any cotton fly buildup inside the cable chain duct, because it can cause the cable chain to fall off.
Using wax makes the AD more susceptible to accidental slipping. If the stopping performance becomes less precise or deteriorates, clean the traveling surface of the rails with a cloth moistened with water, or water diluted with mild detergent.

3-4 After Maintenance & Inspection

1. **Open the compressed air valve.**
2. **Raise the circuit protector operation lever located on the left side of the AD.**
3. **Press the winder start button.**
4. **If the AD automatic start mode is turned OFF, press the AD start button.**

- **Precautions**

- During inspection, ensure that you do not damage any functioning parts.
- After the inspection, ensure that the following steps have been undertaken before turning the AD power switch ON: All bolts that were loosened during the inspection have been securely tightened. All tools or measuring instruments that were used during the inspection have been removed. All wiring or cables that were disconnected during the inspection have been re-connected.

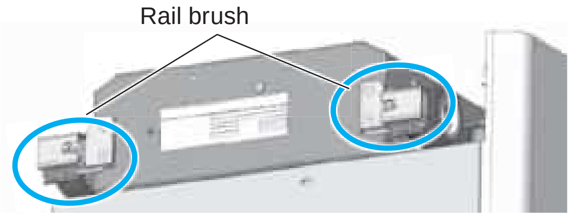
CAUTION

During and after the inspection, be sure to re-tighten the terminal bolts.

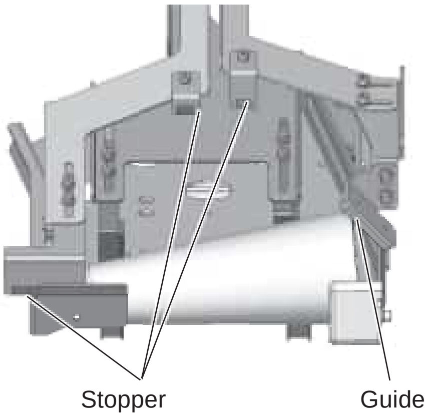
Sec 4 Consumables

If the parts below are worn causing a failure or problem, replace the worn part or parts with a new one.

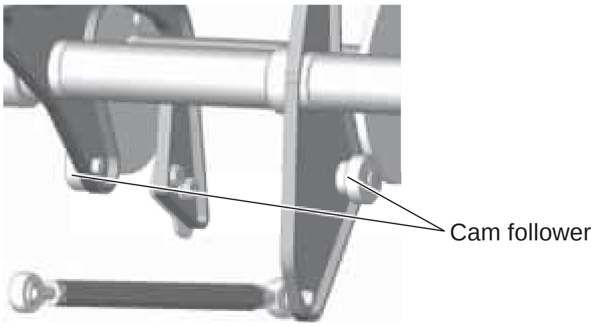
Traveling Drive



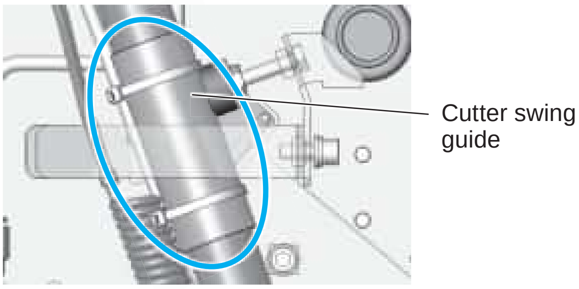
Take-up Tube Control Guide

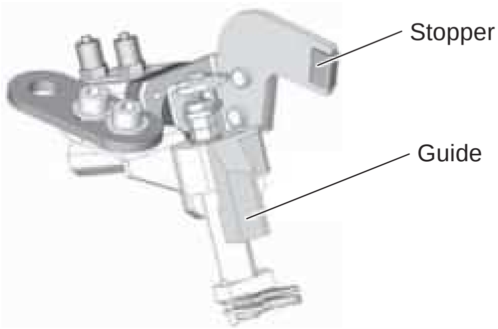

Stopper
Guide

Cam Shaft


Cam follower

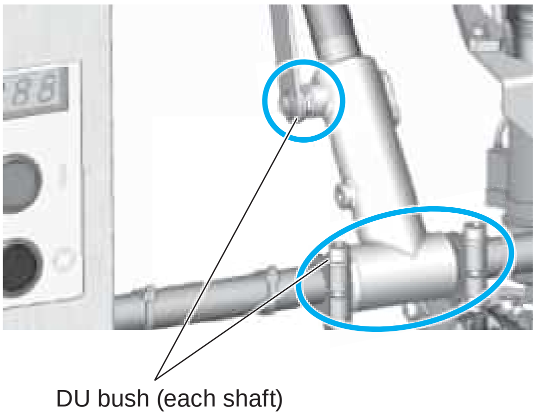
Cutter Swing Guide & Clamp Cutter Stopper

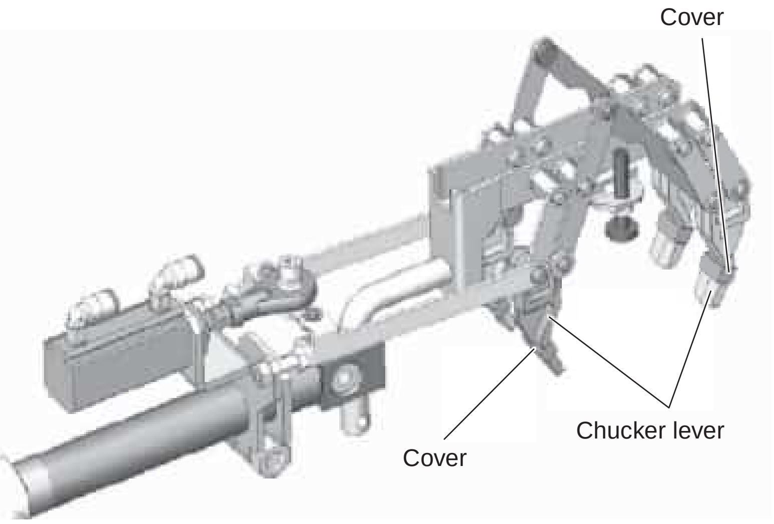

Cutter swing
guide


Stopper
Guide

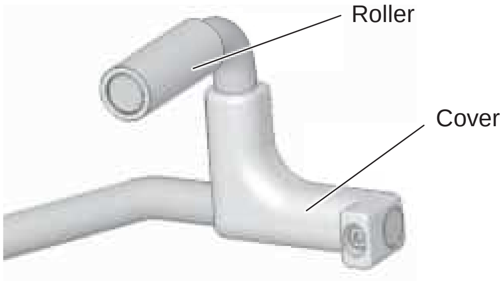
Chucker

Refer to the Parts Catalogue for details.

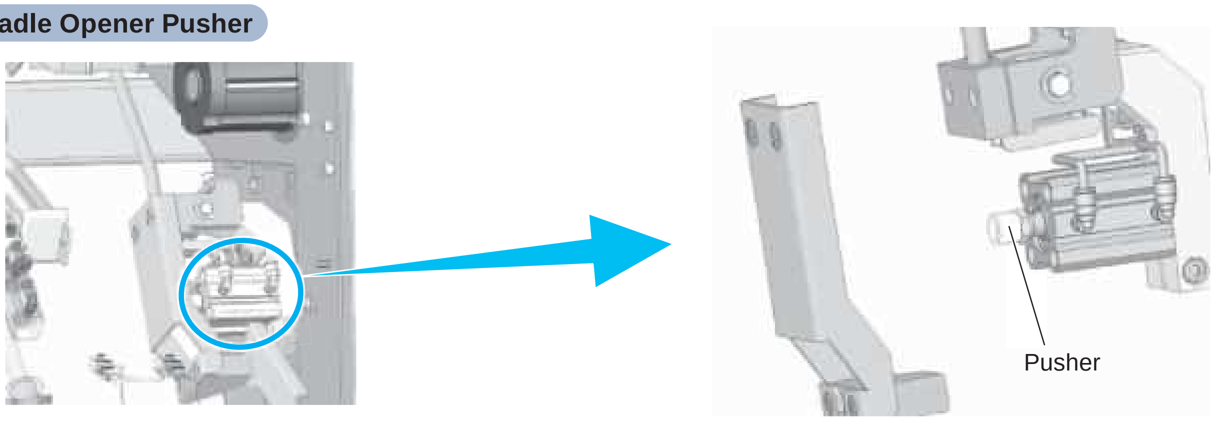

DU bush (each shaft)


Cover
Chucker lever
Cover

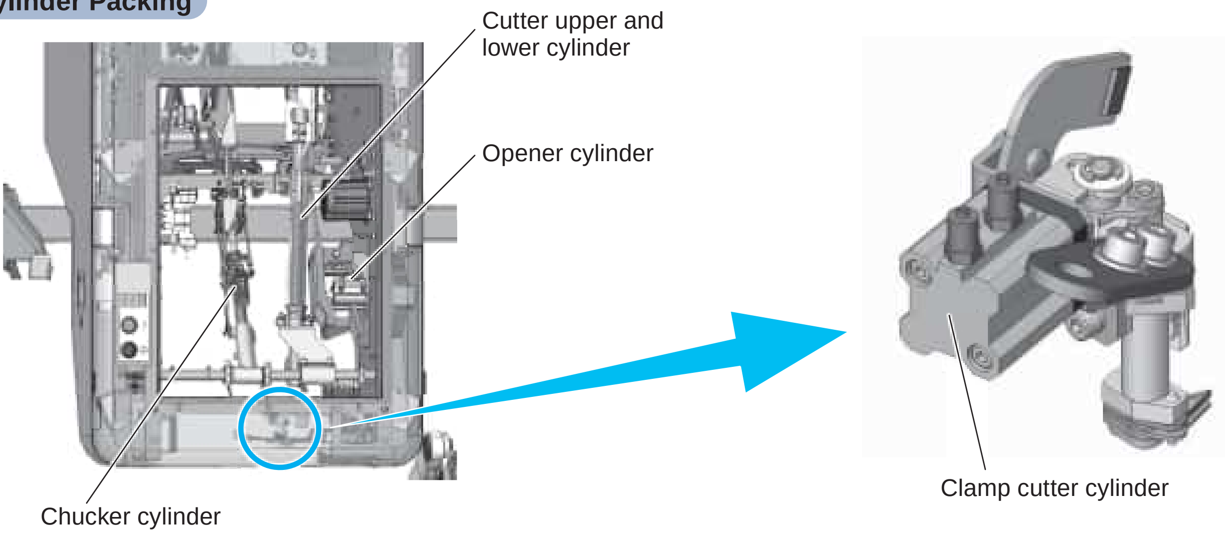
Cradle Opener


Roller
Cover

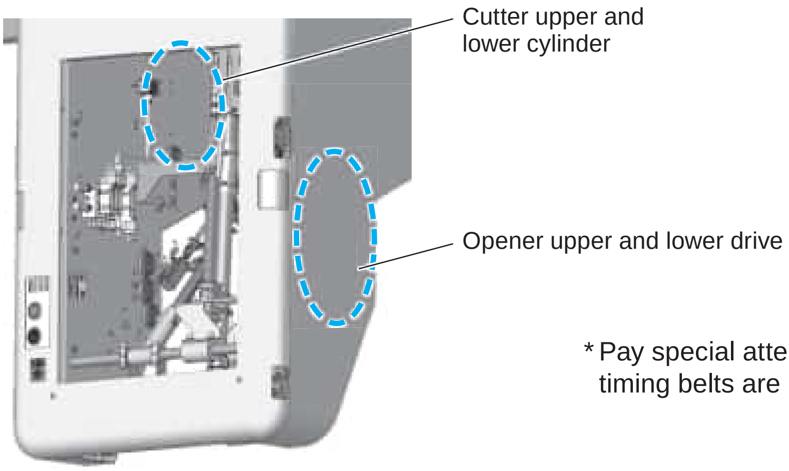
Cradle Opener Pusher



Cylinder Packing


Cutter upper and lower cylinder
Opener cylinder
Chucker cylinder
Clamp cutter cylinder

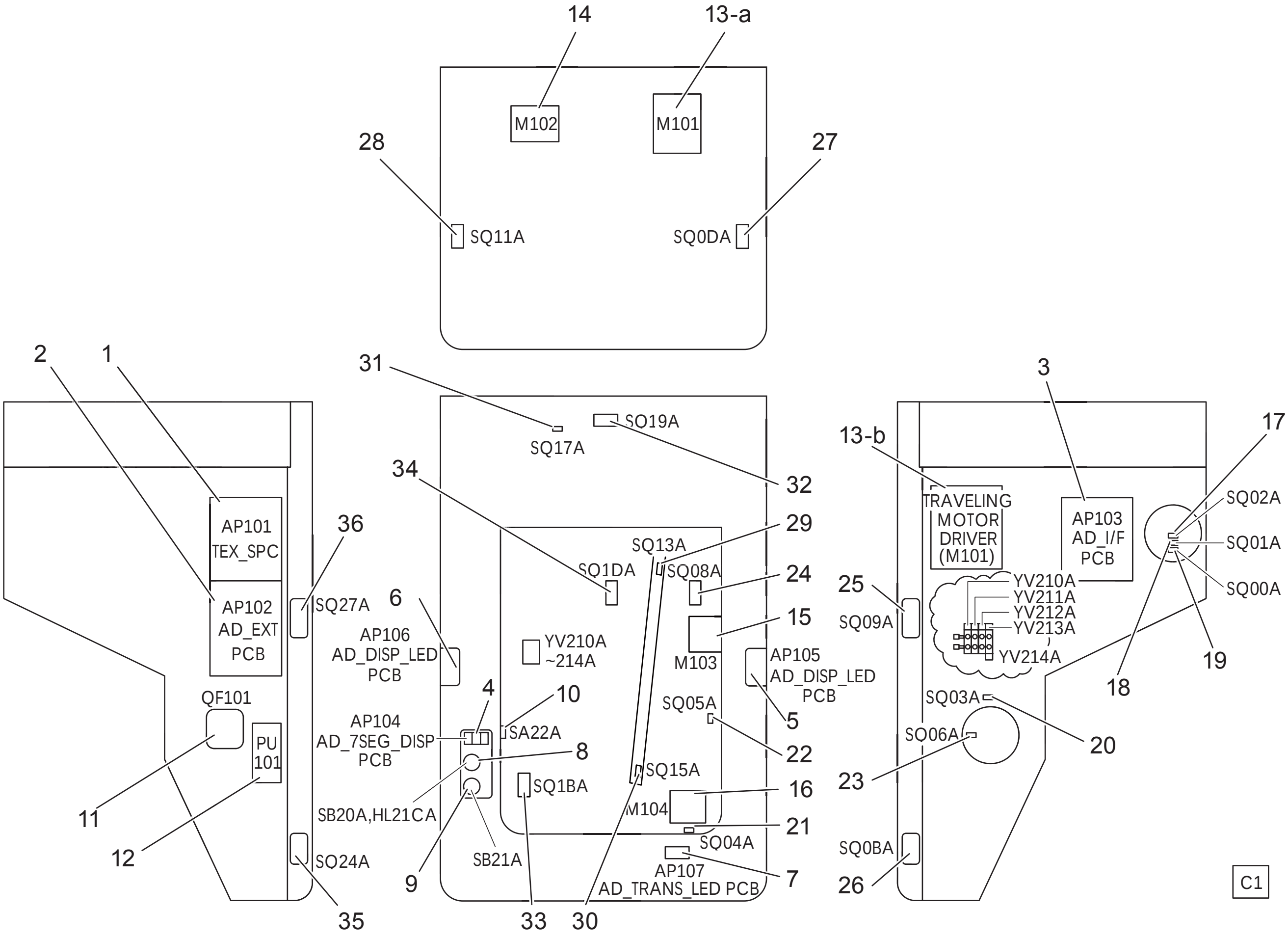
Timing Belt


Cutter upper and lower cylinder
Opener upper and lower drive

* Pay special attention when replacing as the two timing belts are different types.

Sec 5 Electrical Controls

5-1 Electrical Component Layout & Names


14
13-a
M102
M101
28
27
SQ11A
SQ0DA
2
1
31
3
17
AP101
TEX_SPC
AP102
AD_EXT
PCB
36
SQ27A
6
AP106
AD_DISP_LED
PCB
QF101
PU
101
11
12
SQ24A
35
SQ17A
SQ19A
32
34
SQ13A
29
SQ1DA
SQ08A
24
YV210A
~214A
15
M103
4
10
SA22A
AP104
AD_7SEG_DISP
PCB
8
SB20A,HL21CA
SQ1BA
SQ15A
SQ05A
16
M104
21
SQ04A
9
SB21A
AP107
AD_TRANS_LED PCB
7
33
30
AP105
AD_DISP_LED
PCB
5
22
13-b
TRAVELING
MOTOR
DRIVER
(M101)
AP103
AD_I/F
PCB
SQ02A
SQ01A
SQ00A
25
SQ09A
YV210A
YV211A
YV212A
YV213A
YV214A
19
18
SQ03A
SQ06A
20
23
SQ0BA
26
C1

[Electrical component layout & names]

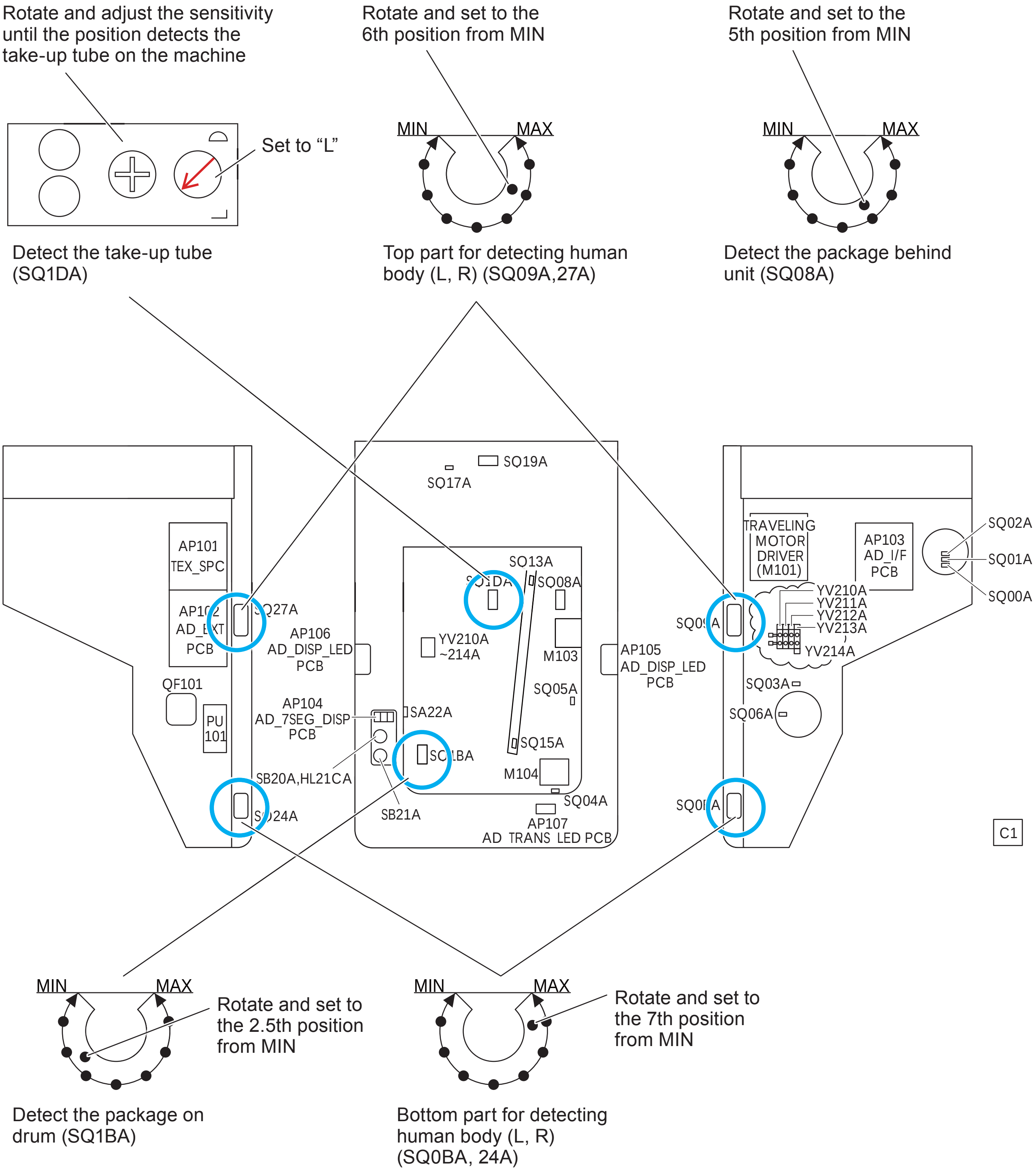
No.	Name	Code
1	Fiber SPC	AP101
2	Expansion board	AP102
3	I/F board	AP103
4	7SEG board	AP104
5	Display board	AP105
6	Display board	AP106
7	Unit communication LED	AP107
8	Start button	SB20A
9	Stop button	SB21A
10	Auto/manual mode switch	SA22A
11	Circuit protector	QF101
12	Switching power supply	PU101
13-a	Traveling motor	M101
13-b	Traveling motor driver	M101
14	Cam axis motor	M102
15	Opener motor	M103
16	Yarn guide motor	M104
17	stop timing sensor (HALL IC)	SQ00A
18	Cam axis home position sensor (HALL IC)	SQ01A
19	Chucker and cutter timing sensor (HALL IC)	SQ02A
20	Opener home position sensor (HALL IC)	SQ03A
21	Yarn guide home position sensor (HALL IC)	SQ04A
22	Opener cylinder detection sensor (HALL IC)	SQ05A
23	Opener count sensor (HALL IC)	SQ06A
24	Package detection (unit rear) sensor (PHO)	SQ08A
25	Human body detection top sensor (right) (PHO)	SQ09A
26	Human body detection bottom sensor (right) (PHO)	SQ0BA
27	Return magnet detection (right) sensor (RS)	SQ0DA
28	Return magnet detection (left) sensor (RS)	SQ11A
29	Yarn pickup cylinder top-end detection sensor (PXS)	SQ13A
30	Yarn pickup cylinder bottom-end detection sensor (PXS)	SQ15A
31	Detection sensor for index plate engagement (PXS)	SQ17A
32	Index block count sensor (PXS)	SQ19A
33	Package detection (on drum) sensor (PHO)	SQ1BA
34	Take-up tube detection sensor (PHO)	SQ1DA
35	Human body detection bottom sensor (left) (PHO)	SQ24A
36	Human body detection top sensor (left) (PHO)	SQ27A

* Changes or additions to the codes may occur without prior notice.
PHO: Photoelectronic sensor
PXS: Proximity sensor
HALL IC: Hole IC
RS: Reed switch

5-2 Sensor & Controller Level Settings

The sensor and controller levels have already been set prior to shipment.
However, if there are any faulty parts that must be replaced, be sure to reset the sensor and controller levels.

Sensor



Rotate and adjust the sensitivity until the position detects the take-up tube on the machine

Set to "L"

Detect the take-up tube (SQ1DA)

Rotate and set to the 6th position from MIN

Top part for detecting human body (L, R) (SQ09A,27A)

Rotate and set to the 5th position from MIN

Detect the package behind unit (SQ08A)

Rotate and set to the 2.5th position from MIN

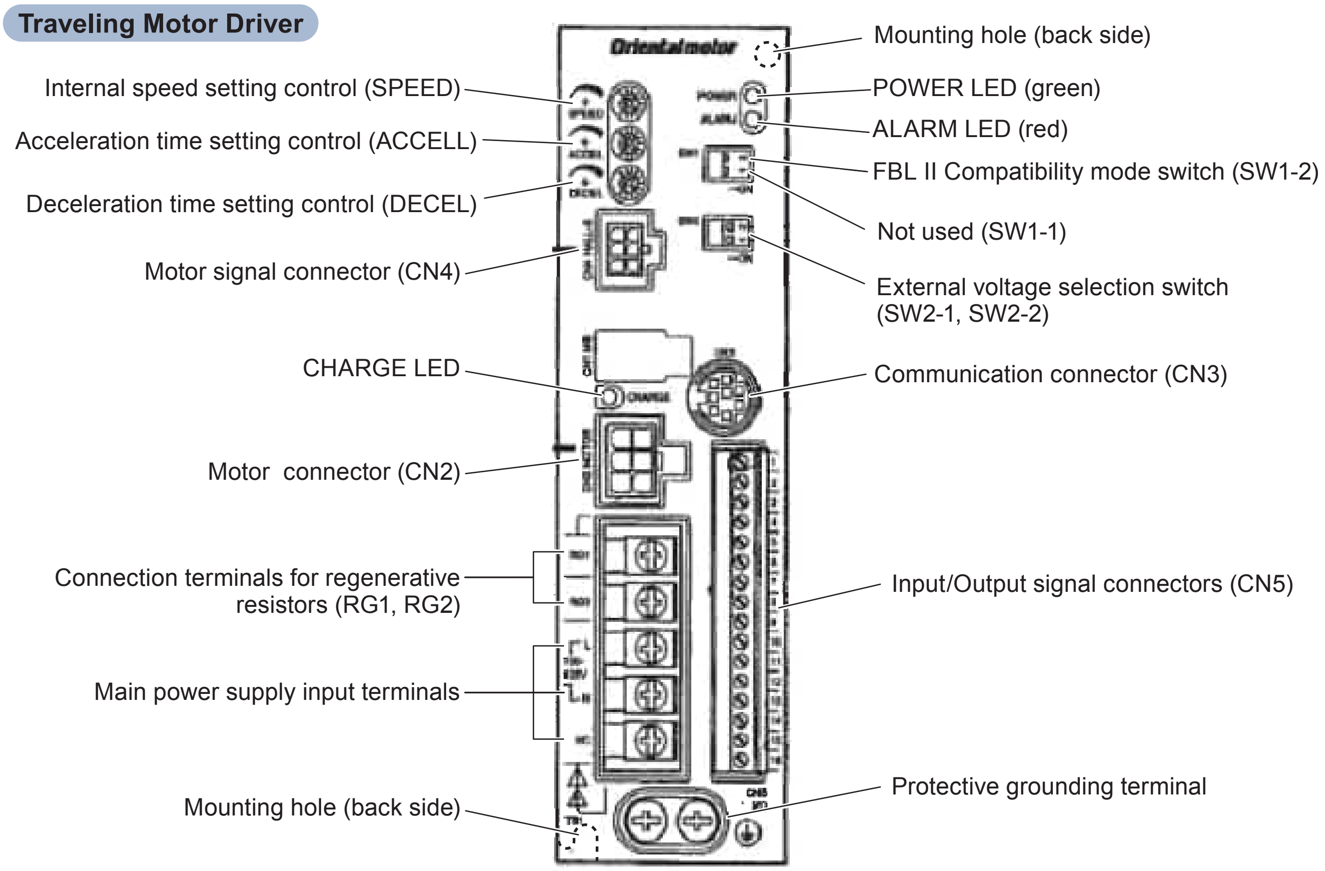
Detect the package on drum (SQ1BA)

Rotate and set to the 7th position from MIN

Bottom part for detecting human body (L, R) (SQ0BA, 24A)

MIN
MAX
SQ19A
SQ17A
SQ13A
S 1DA
SQ08A
AP101
TEX_SPC
AP1 2
AD_E XT
PCB
Q27A
AP106
AD_DISP_LED
PCB
YV210A
~214A
M103
SQ05A
QF101
PU
101
AP104
AD_7SEG_DISP
PCB
SA22A
SC 1BA
SQ15A
M104
SB20A,HL21CA
S 24A
SB21A
SQ04A
AP107
AD_TRANS_LED PCB
AP105
AD_DISP_LED
PCB
TRAVELING
MOTOR
DRIVER
(M101)
AP103
AD_I/F
PCB
SQ02A
SQ01A
SQ00A
SQ0 A
YV210A
YV211A
YV212A
YV213A
YV214A
SQ03A
SQ06A
SQ0 A
C1

Traveling Motor Driver


Mounting hole (back side)
Internal speed setting control (SPEED)
POWER LED (green)
Acceleration time setting control (ACCELL)
ALARM LED (red)
FBL II Compatibility mode switch (SW1-2)
Deceleration time setting control (DECEL)
Not used (SW1-1)
Motor signal connector (CN4)
External voltage selection switch (SW2-1, SW2-2)
CHARGE LED
Communication connector (CN3)
Motor connector (CN2)
Connection terminals for regenerative resistors (RG1, RG2)
Input/Output signal connectors (CN5)
Main power supply input terminals
Protective grounding terminal
Mounting hole (back side)
Orientalmotor

Name	Description
Internal speed setting control [SPEED]	Sets the rotation speed of the motor
Acceleration time setting control [ACCEL]	Sets the acceleration time during motor startup
Deceleration time setting control [DECEL]	Sets the deceleration time for motor stoppage
POWER LED (green)	Lights up when the main power is turned on
ALARM LED (red)	Flashes when the protective function is enabled
Motor signal connector (CN4)	Signal cable connection
FBL II Compatibility mode switch (SW1)	SW1-1: Not used. SW1-2: Sets the FBL II compatibility mode
External voltage selection switch (SW2)	SW2-1: Selects the power supply for the input signal Selects the external or internal power supply on the driver
	SW2-2: Switch to match the external DC voltage Select DC5 V or DC10 V
CHARGE LED (red)	- Lights up when the main power is turned on - Goes off when internal remained voltage decreases to the safety level after turning off the main power
Motor connector (CN2)	Motor cable connection
Connection terminals for regenerative resistors (TB1) [RG1, RG2]	Connection for the optional regenerative resistor EPRC-400P (sold separately)
Main power supply input terminals (TB1) [L, N] (Single phase input) [L1, L2, L3] (3 phase input)	Main power supply connections - Single phase 100 – 120 V: Connect the single phase 100 – 120 V to L and N - Single phase 200 – 240 V: Connect the single phase 200 – 240 V to L and N - 3 phase 200 – 240 V: Connect the 3 phase 200 – 240 V to L1, L2 and L3
Communication connector (CN3)	Connection for the data setting control OPX-2A
Input/Output signal connectors (CN5)	Connection when using an external power supply for input/output signals - Connects input/output signals for the programmable controller, etc. - Connects the thermostat output for the regenerative resistor EPRC-400P (optional and sold separately) - Connects the external speed setting control (included)
Protective grounding terminal	Use an AWG 18-14 (0.75 – 2.0 mm^2) ground wire

* You can change to the same settings as the FBL II Series by using the FBL II compatibility mode.

5-3 Alarm Description

Alarm Type	Signal Lamp	Details
DC24 V Power Check	Lit	There is a DC24 V power fault on the AD (short circuit, etc.)
DC5 V Power Check		There is a DC5 V power fault on the AD (short circuit, etc.)
Communication Error	Flashing	A communication error occurred between the AD and the SPC on the machine
Cylinder Sensor Alarm	Lit	A sensor error occurred on the yarn pickup cylinder for the AD
Cylinder Raise Cycle Error		An error occurred when the yarn pickup cylinder for AD raised
Cylinder Lower Cycle Error		An error occurred when the yarn pickup cylinder for AD lowered
Cycle Time Over		The doffing operation was not completed within the set time period.
Package Ejection Error		A package was left on the drum even though the opener on the AD was opened
Not In Home Position Alarm		The home position sensor on the AD cam axis is still turned OFF
Chuck Error Alarm		The AD chucker did not clamp the take-up tube correctly, and it is stuck on the stocker
Yarn Guide Not In Home Position Alarm		The home position sensor for the yarn guide lever should be ON but it is still OFF
Opener Not In Home Position Alarm		The home position sensor for the opener should be ON but it is still OFF
Opener Open/Close Operation Alarm		The opener does not open/close correctly.
Human Body Detection Sensor Damage		The AD travel operation is enabled, but the human body detection sensor is still turned ON
Index Count Sensor Alarm		The index count sensor for the AD remains ON (or OFF) during the travel operation
Take-up Tube Detection Sensor Damage		The take-up tube detection sensor for the AD remains ON (or OFF) during the travel operation
Index Out Error		The index plate for the AD is not released
Traveling Motor Alarm		An error occurred on the traveling motor for the AD
Overrun Alarm		The AD travelled for more than 15 seconds after switching to low speed